March 29, 2018

Professor Agustina Fitrianingrum
Management Study Program, Faculty of Business and Economic
Universitas Internasional Batam

Invitation to Kanagawa Institute of Technology
KAIT International Symposium 2018

Dear Professor Agustina Fitrianingrum,

I hope this letter finds you well. Let me begin by thanking you for your continuous support of our university.

The Kanagawa Institute of Technology has actively engaged in academic exchange with other universities around the world and strived to improve the level of students' education under a student-centric approach. In line with these efforts, we are holding an international symposium (see attachments for details) to which we are inviting researchers in Japan who are deeply involved with our university and researchers from our partner educational institutions in Asia. The symposium will consist of a panel discussion and research presentations from the perspectives of different areas of specialization, under the overall theme of "Science, Technology, and Education to Sustain a Safe and Secure Society."

We realize you have a busy schedule, but we hope you will consider attending the symposium.

Yours sincerely,

K. Komiya

Kazumi Komiya
President
Kanagawa Institute of Technology

Attachment 1

KAIT International Symposium 2018

1. Objective

Ever since its establishment in 1963, the Kanagawa Institute of Technology has sent many students out into the world under the principle it was founded upon—to develop people who contribute to the creation of a science- and technology-oriented nation—and used various research results to give back to the community.

In light of these achievements and the current state of globalization, the university is holding a symposium to which it has invited researchers who are at the forefront of their fields in Japan and researchers from its partner universities in regions in Asia which have achieved remarkable development. Under the overall theme of "Science, Technology, and Education to Sustain a Safe and Secure Society," the symposium will consist of research presentations and lectures in three areas—information, environment and energy, and health and life sciences—and a panel discussion on increasing international exchange through efforts such as engineering education. The symposium promises to serve to invigorate research that is beneficial to building a prosperous society for the next generation, and further deepen the partnerships between many universities and researchers within and outside Japan.

2. Date and Venue

Date: Tuesday, September 4 to Wednesday, September 5, 2018

Venue: Kanagawa Institute of Technology (Atsugi city, Kanagawa)

3. Program (tentative)

Tues., September 4	Morning:	Opening remarks		
	Afternoon:	Breakout sessions	Lectures:	Information
				Environment and energy
				Health and life sciences
	Evening:	Reception (university cafeteria)		
Wed., September 5	Morning:	Breakout sessions	Lectures:	Information
				Environment and energy
				Health and life sciences
	Afternoon:	Panel discussion		
		"Next-generation Engineering Education" (tentative title)		
		Student poster session		
		Closing remarks		

Attachment 2

4. Expenses

KAIT will cover transportation expenses to the university and accommodations (hotel in Atsugi). A poster session will be held where students will be able to present their research, so please consider inviting your students. One student per professor will be given up to $450 in financial assistance.

Contact information: Tsutomu Suzuki
International Symposium Secretariat,
International Affairs Office, Kanagawa Institute of Technology
Email: ic@kait.jp

UNIVERSITAS INTERNASIONAL BATAM

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Fax : + 62 778 743 7112

LETTER OF OFFICIAL DUTY TRAVEL

No : 008/LPPM/SPD-UIB/VIII/2018

1.	Duty References	:	Invitation to Kanagawa Institute of Technology KAIT International Symposium 2018
2.	Authorized By/ Position	:	Wisnu Yuwono, SE., MM / Head of the Institute for Research and Community Service
3.	Delegates Names/ Position	:	Dr. Agustina Fitraningrum / Lecturer of S-1 Management
4.	Purpose Of Travel	:	Invitation to Kanagawa Institute of Technology KAIT International Symposium 2018
5.	Transportation Means	:	Airplane
6.	A. Departure Point	:	Batam, Indonesia
	B. Arrival Point	:	Kanagawa Institute of Technology, Japan
7.	A. Duration Of Stay	:	4 (Four) days
	B. Departure Date	:	September 03rd, 2018
	C. Arrival Date	:	September 06th, 2018
8.	Funding Sources A. Institution	:	Organizer
	B. Others	:	

DUTY AUTHORIZATION

Submitted On November 30th, 2018	Authorized On November 30th, 2018	Approved In Batam On November 30th, 2018
Wisnu Yuwono, SE., MM **Head of the Institute for Research and Community Service**	**Dr. Meiliana** **Vice President of Academic Affairs**	**Dr. Teddy Jurnali** **Vice President of Financial Affairs**

DESTINATION POINT	RETURN POINT
Arrived in : Kanagawa Institute of Technology, Japan DATE : September 03rd, 2018	Has Been Checked, Stating That The Official Duty Travel Has Been Done Accordingly and Only for The Official Purpose in A Reasonable Time.
Arrived in : DATE :	Arrive In: Batam,

ATTENTION: The high official issuing this letter of Official Duty Travel, or the officer(s) performing the travel, or the high official(s) approving/ authorizing the departure and the return, are responsible for the loss caused by any errors, negligance, and absence according to the current regulation.

KAIT International Symposium 2018

"Science, Technology, and Education to Sustain a Safe and Secure Society,"

Kanagawa Institute of Technology
September 4, 5 /2018

KAIT International Symposium 2018

Kanagawa Institute of Technology
1030 Shimoogino, Atsugi-shi, Kanagawa 243-0292, Japan

【Reception】 K1 Building 1F near the south entrance
【Cloak】 K1 Building 3F room 305
【Computer and Coffee Room】 K1 Building 3F room 303
【Lunch】 K1 Building 12F
【Welcome Party】 Rembrandt Hotel Atsugi

Day 1:September 4th, 2018

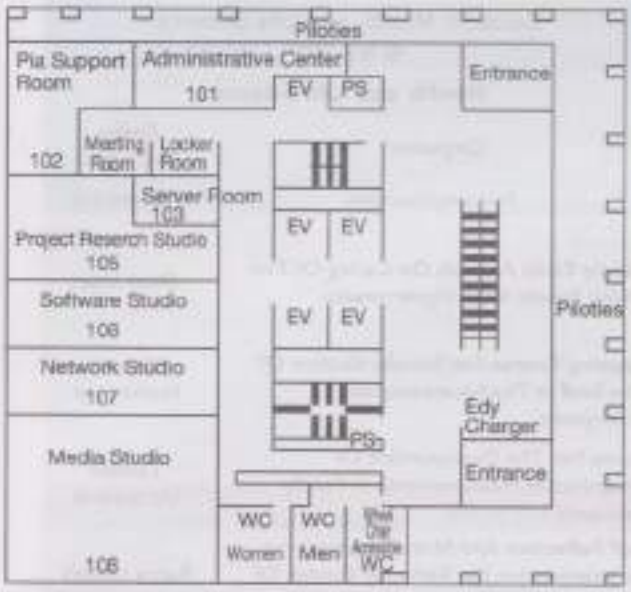
Sessions	Location	Time
Opening Ceremony	K1 Building 12F Media Hall	9:30-9:50
Human Media	K1 Building 12F Media Hall	10:00-12:00
AI (Artificial Intelligence)	K1 Building 12F Media Hall	13:00-15:00
Environment and Next Generation Energy	K1 Building 2F room 201	13:00-15:00
Environmental Analysis and Engineering	K1 Building 2F room 201	15:30-17:00
Health and Life Science	K1 Building 2F room 202	10:00-12:00
Health and Life Science 2	K1 Building 2F room 202	15:30-17:00

Day 2:September 5th, 2018

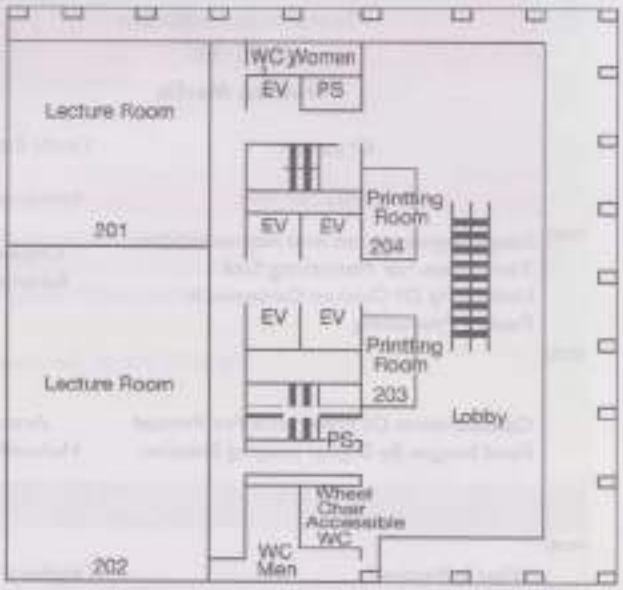
Sessions	Location	Time
Engineering and Education	K1 Building 2F room 201	9:30-10:50
Introduction of Engineer Educational System for Individual University	K1 Building 2F room 201	11:00-12:00
Poster Presentations for Students	K1 Building 2F lobby	13:15-14:45
Closing	K1 Building 2F room 201	15:00-

K1 Building for Faculty of Information Technology

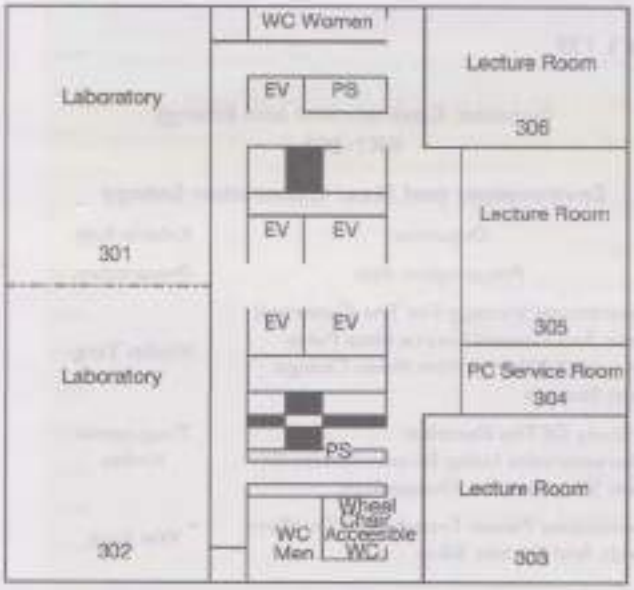
1F



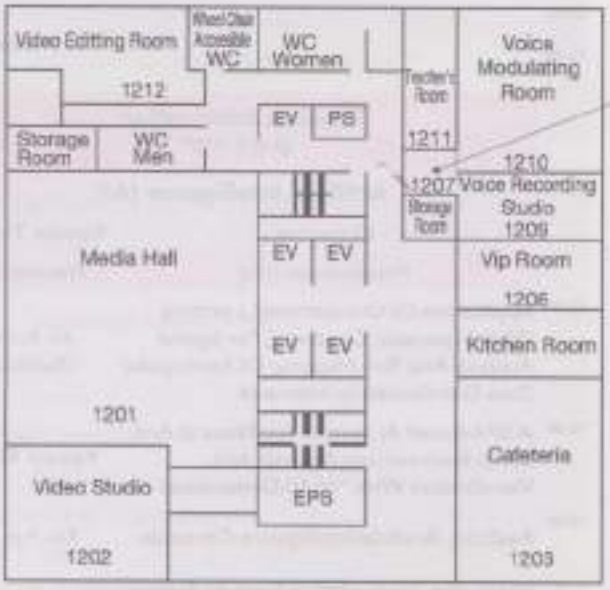
2F



3F



12F



KAIT International Symposium 2018

PROGRAM

KANAGAWA INSTITUTE OF TECHNOLOGY

DAY 1. September 4 (Tuesday)

8:30 - 9:55 **Opening Remarks: At K1 12F Kazumi Komiya**

	Session: Information @ K1-12F		Session: Health and Life Science @ K1-202	
	Human Media		**Health and Life Science**	
	Organizer	Yuichi Bonnoi	Organizer	Emiko Shibayama
	Presentation title	Presentator	Presentation title	Presentator
10:00	Image Segmentation And Representation Techniques For Monitoring Size Uniformity Of Chicken Carcasses In Poultry Processing	Chawan Koopipat	Family Tasks Analysis On Caring Of The Older People With Hypertension	Dewi Utari
10:30			Training Course For Standardization Of The Staff In The Neurosurgical Emergency	Mayumi Hashimoto
	Consideration Of Preference For Printed Food Images By Digital Imaging Solution	Aran Hansuebsai	Issues For The Development Of Quantitative Measurements In Family Research	Tamaki Hamazono
11:00	What Is Vection?	Takeharu Seno	Self Reflection And Stress Management As Intervention On Reducing Burden Of Stroke Caregiver In Self Help Group	Ratna Lestari
11:30			Status Of Anxiety And Depression Among Chronic Disease Patients In Japan	Sachiko Tamura
	Towards More User-friendly Systems	Akihiro Miyata	A Primary Health Care System In Bunaken Island, Indonesia	Emiko Shibayama

12:00 - 12:50 **Lunch At K1 12F**

	Session: Information @ K1-12F		Session: Environment and Energy @K1-201	
	Artificial Intelligence (AI)		**Environment and Next Generation Energy**	
	Organizer	Kosuke Takano	Organizer	Keishin Koh
	Presentation title	Presentator	Presentation title	Presentator
13:00	Application Of Unsupervised Learning With Automatic Clustering For Spatial Analysis And Risk-Mapping Of Earthquake Data Distribution In Indonesia	Ali Ridho Barakba	Operational Strategy For The Combined Solar And Ground Source Heat Pump Systems(SGSHPS) With Phase Change Heat Storage	Weibo Yang
13:30	A SPA-based AI System For Natural And Social Environment-Analysis And Visualization With "Multi-Dimensional	Yasushi Kiyoki	A Study Of The Electrical Characteristics Using By-pass Diodes Of New Structure For Photovoltaic	Tsugutomo Kudou
14:00	Realizing Artificial Intelligence Concepts	Kin Fun Li	Contactless Power Transfer For Dc Micro Grids And Electric Bikes	Wei Jiang
14:30	Interactive Transcription Support System For Japanese Historical Books With A Self-Proliferating Character Image Database	Chulapong Panickrlangkrai	Research And Development Of High Solar Reflective Pigments	Pattana Rakkwamsuk

15:00 - 15:30 **Coffee Break At K1 #303**

	Session: Environment and Energy @K1-201		Session: Health and Life Science @ K1-202	
	Environmental Analysis and Engineering		**Health and Life Science**	
	Organizer	Takaji Takamura	Organizer	Emiko Shibayama
	Presentation title	Presentator	Presentation title	Presentator
16:00	Occurrence Of Endocrine Disrupting Activities And Pharmaceuticals In Treated Effluents From Taiwanese Wastewater Treatment Plants	Pei-Hsin Chou	Nursing Student Perception On Family Health Assessment	Suwarno
16:00	Updating Genotoxicity Evaluation Methods	Tomonari Matsuda	Communication Support System For Deafblind Persons	Yasuhiro Matsuda
16:00		Benno Rahardyan	Factors Influencing Older People Participation In Community Healthcare Program (Posyandu) At Yogyakarta	Anastasia Suci Sukmawati
	Welcome Party At Rembrandt Hotel Atsugi			

DAY 2, September 5 (Wednesday)

	Session: Environment and Education @ K1-201	
	Engineering and Education	
	Organizer Yuichi Bannai/Takaji Takamura	
	Presentation title	Presentator
9:30	Next-generation Engineering Education In Disruptive Era	Suda Kiatkamjornwong
10:00	Engineering Design Education In Laboratory Class	Yasuro Ikuma
10:20	Internationalization Modeling To Improve Higher Education Institution's Competitiveness	Agustina Fitrianingrum
	Introduction of Engineer Educational System for Individual University	
	Organizer Yo Fujimura	
11:00	Electronics Engineering Polytechnic Institute of Surabaya	
11:10	King Mongkut's University of Technology Thonburi	
11:20	University of Victoria	
11:30	Yangzhou University	
11:40	National Cheng Kung University	
11:50	Institut Teknologi Bandung	
12:00	Jenderal Achmad Yani University of Yogyakarta	
12:15	**Lunch At K1 12F**	
	Poster Presentation for Students	
13:10	One min flash talk presentation / Organizer Yasuhiro Iida, Hidenobu Shimizu	
13:45 - 14:45	Presentation in front of poster	
15:00	Ending Remarks	

Program

DAY1 Human Media

10:00 - 10:30 Image Segmentation And Representation Techniques For Monitoring Size Uniformity Of Chicken Carcasses In Poultry Processing

Chawan Koopipat
Chulalongkorn University

10:30 - 11:00 Consideration Of Preference For Printed Food Images By Digital Imaging Solution

Aran Hansuebsai
Chulalongkorn University

11:00 - 11:30 What Is Vection?

Takeharu Seno
Kyushu University

11:30 - 12:00 Towards More User-friendly Systems

Akihiro Miyata
Nihon University

DAY1 Artificial Intelligence (AI)

13:00-13:30 Application Of Unsupervised Learning With Automatic Clustering For Spatial Analysis And Risk-Mapping Of Earthquake Data Distribution In Indonesia

Ali Ridho Barakba
Electronics Engineering Polytechnic Institute Of Surabaya

Tri Harsono
Electronics Engineering Polytechnic Institute Of Surabaya

Anwang Sudarsono
Politeknik Elektronika Negeri Surabaya

13:30 -14:00 A SPA-based AI System For Natural And Social Environment-Analysis And Visualization With "Multi-Dimensional World-Map"

Yasushi Kiyoki
Keio University

14:00 -14:30 Realizing Artificial Intelligence Concepts

Kin Fun Li
University of Victoria

14:30 - 15:00 Interactive Transcription Support System For Japanese Historical Books With A Self-Proliferating Character Image Database

Chulapong Panickriangkrai
Chulalongkorn University

Liang Li
Ritsumeikan University

DAY1 Environment and Next Generation Energy

13:00-13:30 Operational Strategy For The Combined Solar And Ground Source Heat Pump Systems(SGSHPS) With Phase Change Heat Storage

Weibo Yang
Yangzhou University
R. Xu
Yangzhou University
B. B. Yang
Yangzhou University

13:30 -14:00 A Study Of The Electrical Characteristics Using By-pass Diodes Of New Structure For Photovoltaic Applications

Tsugutomo Kudou
Kanagawa Institute of Technology
Hirotaka Tsushima
Tohoku-gakuin University
Fuhimiko Sugawara
Tohoku-gakuin University

14:00 -14:30 Contactless Power Transfer For Dc Micro Grids And Electric Bikes

Wei Jiang
Yangzhou University
Song Xu
Yangzhou Universit
Seiji Hashimoto
Gunma University

14:30 - 15:00 Research And Development Of High Solar Reflective Pigments

Tangon, C.
King Mongkut's University Of Technology Thonburi
Tangkittimasak, T.,
King Mongkut's University Of Technology Thonburi
Supothina , S,
National Metal And Materials Technology Center, National Science And Technology Development Agency (NSTDA),
Pattana Rakkwamsuk
King Mongkut's University Of Technology Thonburi

DAY1 Environmental Analysis and Engineering

15:30 - 16:00 Occurrence Of Endocrine Disrupting Activities And Pharmaceuticals In Treated Effluents From Taiwanese Wastewater Treatment Plants

enderal Achmad Yani University of
Yogyakarta

16:30 - 17:00 Factors Influencing Older People Participation In Community Healthcare Program (Posyandu) At Yogyakarta

Anastasia Suci Sukmawati Jenderal
Achmad Yani University of Yogyakarta

DAY2 Engineering and Education

9:30 - 10:00 Next-generation Engineering Education In Disruptive Era

Thanaruk Theeramunkong
Thammasat University
The Artificial Intelligence Association of Thailand
AFRS (T), Academy of Science, Royal Institute of Thailand

Parames Chutima
AFRS (T), Academy of Science, Royal Institute of Thailand
Chulalongkorn University

Worsak Kanok-Nukulchai
The Asian Institute of Technology
FRS (T), Academy of Sciences, Royal Society of Thailand

Suda Kiatkamjornwong
FRS (T), Academy of Sciences, Royal Society of Thailand
Chulalongkorn University

10:00 - 10:20 Engineering Design Education In Laboratory Class

Yasuro Ikuma
Kanagawa Institute of Technology

10:20 - 10:50 Internationalization Modeling To Improve Higher Education Institution's Competitiveness

Agustina Fitrianingrum
Universitas Internasional Batam
Batam

Poster Session Program

Information

1 Interactive Integral Photography Holographic Pyramid Using a Game Engine

Shohei Anraku, Toshiaki Yamanouchi, Kazuhisa Yanaka

Kanagawa Institute of Technology

2 Image Ranking Algorithms

Marina Ibrishimova , Kin Fun Li

University of Victoria, Canada

3 High Accuracy Indoor Positioning Implemented Data Transmission Function Using Diffused Sound

Takeru Kadokura, Shigenori Ioroi, Hiroshi Tanaka

Kanagawa Institute of Technology

4 Sign Language Recognition Performance By Machine Learning Using Multiple Classifiers

Tatsunori Ozawa, Kazuki Sakamoto, Hiromitsu Nishimura, Hiroshi Tanaka.

Kanagawa Institute of Technology

5 A Method For Extracting User Roles Based On User's Activities On Online Technical Communication

Hayato Tsukiji Kosuke Takano

Kanagawa Institute of Technology

6 Cross-modal Interaction Between Vection Perception And Olfactory Stimulation

Aoi Aruga, Yuichi Bannai, Takeharu Seno

Kanagawa Institute of Technology

7 Emotion Extraction From User's Utterances In Microblog For Content Recommendation

Shun Fujita Kosuke Takano

Kanagawa Institute of Technology

8 An Automatic Testing System For Server Failures Using Virtual Execution Environment

Takayuki Kasai Kosuke Takano

Kanagawa Institute of Technology

9 Development And Evaluation Of A Gustatory Display Using A Piezoelectric Device

Yukito Nagakusa, Yuichi Bannai.

Kanagawa Institute of Technology

10 Development Of An Olfactory Display Using A Piezoelectric Device

Shigeaki Nakamura, Yuichi Bannai

Kanagawa Institute of Technology

11 A Basic Study Of A Conversational Agent Speaking With Ambiguity

Genki Kurita, Ryota Nakahara, Daiji Nagaoka, Akihiro Miyata

Nihon University

Environment and Engineering

22 Analysis Of PV Array With MPPT Unit

Yusuke Takeda Kazutaka Itako

Kanagawa Institute of Technology

23 Consideration Of Time-based Interlocking Control System For Motorized Blinds And Lighting

Sayo Kaneko, Yusuke Kumakura,
Kazuyuki Aihara, Takahiro Sakai,
Takayuki Mitsu, Yuki Hori, Masao Isshiki

Kanagawa Institute of Technology

24 Withdrawn

25 Synthesis Of Photoresponsive Polymer Material With Dynamic Cross Linker

Motoko Kudo, Takashi Saito

Kanagawa Institute of Technology

26 Study Of The Method For Improving Traffic Flow With Safety Driving In The Mixed Environment Of Autonomous Vehicle And Human-Operated Vehicle

Hiroto Furukawa, Ryozo Kiyohara

Kanagawa Institute of Technology

27 Elongation Of Hydantoins Bearing Glutarimide Or Succunimide

Ryuku Namiki Jun-ichi Yamaguchi

Kanagawa Institute of Technology

28 A Study On Risk Predictive Technologies Considering A Road Surface Friction M In Unsignalized Intersection

Tatsuya Shimasaki, Hideo Inoue

Kanagawa Institute of Technology

29 The Study Of Evaluation Methodology About Risk Prediction Algorithm Using Traffic Space Modeling

Haipeng Zhang, Hideo Inoue,

Kanagawa Institute of Technology

30 Converter And Communication For LVDC Microgrids

HuangMing, Wei Jiang

Yangzhou University

31 A Low Cost Hardware-in-the-loop Simulator For Power Electronic Circuits

Haining Ma, Wei Jiang

Yangzhou University

32 Evalution Of Hyaluronan Production By HAS2 Inducing Compounds From Atractylodis Lanseae And The Construction Of HAS2-GFP Fusion Vector

Tam Nguyen, Iida Yasuhiro, Yukio Nakamura

Kanagawa Institute of Technology

Image Segmentation and Representation Techniques for Monitoring Size Uniformity of Chicken Carcasses in Poultry Processing

Chaiteppprasith, B. and *Koopipat, C.

Chawan.k@chula.ac.th, Department of Imaging and Printing Technology, Faculty of Science, Chulalongkorn University, Thailand.

Size non-uniformity is the main cause of intestine breakage at the evisceration unit on poultry processing by automatic poultry processing machine. When this problem is found, the production line is inflected, then the machine has to be stopped for cleaning, therefore cost and processing time are increased. The size uniformity of chicken carcasses is usually controlled by life chicken weight, however, its size and weight is not correlated wall.

This research proposed a series of techniques for monitoring the uniformity of chicken carcasses in a poultry processing. First, chicken carcasses was separately segmented from the background based on chicken skin color. We tested the performance of color segmentation using HSI and LAB color space. Second, five types of filter matrix were tested in order to improve the edge of segmented image and after that morphological method was applied to get rid of noise in the segmented image and background. We tested our algorithm with video clip of poultry processing capturing by a DSLR camera. The results from our proposed method were compared with Haar matrices-like feature method. The performance was evaluated in the case of processing time, Recall, Precision, F1-score, and Similarity.

The results showed that our proposed algorithm can segment chicken carcasses better than the other methods and consumed less resource. After applying image segmentation, the image representation techniques were applied to find out the chicken size that was non-uniform. We also tested the accuracy of our techniques comparing to the ground truth images. It was shown that this techniques were sufficiently detected a chicken carcasses that is non-uniform from the others in the poultry processing plant.

Biography

Chawan Koopipat received B.Sc in Photographic Science and Printing Technology from Chulalongkorn University, Thailand in 1988 and M.Phil in Printing Technology from Rochester Institute of Technology, U.S. in 1989. He received Ph.D. in Image Information Processing from Chiba University, Japan in 2002. He is currently an assistant professor at the Department of Imaging and Printing Technology, Faculty of Science Chulalongkorn University, Thailand. His research work is in the area of multi-spectral imaging and image processing.

Email: chawan.k@chula.ac.th

Consideration of preference for printed food images by digital imaging solution

Aran Hansuebsai

aran.h@chula.ac.th
Department of Imaging and Printing Technology, Faculty of Science, Chulalongkorn University, Bangkok 10330, THAILAND

Digitalization of captured images was studied as the advances in imaging system of digital cameras and digital printers are remarkable. All functions can be accessed by automatic control and image quality has been improving rapidly. However, photographers and printers still cannot maximize their digital images by maintaining the highest level of control over the printing process and to satisfy the customers' sensation. For example, depth feeling, detail expression and naturalness are important attributes in image quality of food images. They can be measured by instrument or subjective estimation which is controlled by various factors such as sharpness, size, overlapping, shade, color and so on. Thus, image processing is necessary to enhance these factors as customers' preference seems to be over expectation, particularly food images.

In this research, post processing for RAW captured food images from a camera was studied. Manipulation software like Adobe Photoshop allowed multiple image adjustments to be saved before printing. We chose three functions such as edge enhancement, resolution and brightness to adjust images and to analyze their impacts on the customers' preference. The images will be processed into the Adobe sRGB color space on a calibrated and profiled monitor. Window XP was employed to help a color management system use ICC profiles to obtain color consistency across devices, including a printer.

5 stage-estimation was used to interpret the printed images and the observation indicated that there was a sensation limit based on the quality attributes. Even it was found that the image quality of prints increased according to the increase of these functions; but within the range that these effects were distinguished by vision. The relationship between the image preference and these three functions was established.

Aran Hansuebsai, Associate Professor of Chulalongkorn University, graduated from London College of Printing, London Institute, UK. He has his expertise in printing technology and its applications, print quality measurement and analysis. He is also interested in media preference analysis across platforms by using digital imaging solution. His research stress the models representing the relationships between the preferences for prints and each imaging function such as resolution, edge enhancement to improve image quality. His works have been published in well-known journals in Japan such as Journal of Imaging Science and Journal of Printing Science and Technology. Recently, he has joined Chulalongkorn University printing house to promote Green Printing by developing the methods to evaluate Carbon Footprint, total VOCs emission and waste in print production. This approach is the first in Thailand for printing industry.

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What is Vection?

[1]*Seno, T.
*corresponding author
seno@design.kyushu-u.ac.jp, Kyushu University, Faculty of Design, Japan

When we are exposed to a visual motion field that simulates the retinal optical flow generated by our movement, we often perceive the subjective movement of our own body. This phenomenon is called vection (e.g. Brandt, Dichgans & Koenig, 1973; Seno, Ito & Sunaga, 2009; Palmisano, Allison, Schira, & Barry, 2015). When you see a train that starts moving in the opposite lane, you will perceive that you yourself move the opposite direction. This is known as the train illusion. The train illusion is a good example of vection.

In 1875, Mach described vection that was induced when he observed the flow of river from the bridge. Maybe the existence of vection was confirmed even before this description. However, the history of the scientific measurement of vection is very short. The first scientific experiment of vection was done in 1973 by Thomas Brandt et al. (Brandt, Dichgans & Koenig, 1973). Thus the vection research has only 40 years history.

In this presentation, a lot of examples of vection studies will be introduced and discuss what vection is.

References

1. Brandt, T., Dichgans, J. & Koenig, E. (1973) Differential effects of central versus peripheral vision on egocentric and exocentric motion perception. Experimental Brain Research, 5, 476-491.
2. Seno T., Ito H. & Sunaga S. (2009) The object and background hypothesis for vection. Vision Research, 49, 2973-82.
3. Palmisano, S., Allison, R. S., Schira, M. M., and Barry, R. J. (2015). Future challenges for vection research: definitions, functional significance, measures, and neural bases. Frontiers in Psychology 6. doi:10.3389/fpsyg.2015.00193.

Biography of a Presenter

Tokehiro Seno is an Associate Professor in the Faculty of Design at Kyushu University in Fukuoka, Japan. He has been researching vection for more than 15 years. He became interested in vection while working on his PhD under the supervision of Professor Tekao Sato at The University of Tokyo and later on as a post-doctoral fellow working with Professor Hiroyuki Ito at Kyushu University. He has also studied and worked in the University of Wollongong under the supervision of Professor Stephen Palmisano, in Wollongong, Australia.

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Towards More User-friendly Systems

Akihiro Miyata
miyata.akihiro@acm.org, Nihon University, Japan

Nowadays, many people have one or more computers. This situation could disadvantage people who cannot use computers well. In this session, I introduce some systems designed for people to use them without difficulty. Specifically, I present IoT systems developed to support (1) kids, (2) elderlies and (3) disableds.

(1) Kids: they are not good at searching on the web, therefore it takes them a lot of time to find digital contents while they are studying something. For example, if they want to know the details of an experiment while studying chemistry, they have to struggle with searching digital contents related to the experiment. To address this issue, I proposed an IoB (*Internet of Books*) approach. By this approach, they only have to hold their smartphone on books to access digital contents.

(2) Elderlies: they sometimes forget to do something important including taking their medicine. Although smart devices (e.g., smartphones, smartwatches and so on) could remind them of important things, they have a tendency to dislike handling computers. To address this issue, I proposed an IoF (*Internet of Furniture*) approach. By this approach, pieces of furniture which already exist in homes support their daily life.

(3) Disableds: some of them cannot move freely in the city owing to physical barriers. Maps that provide positions and kinds of barriers (as known as barrier-free maps) could help them to plan appropriate routes in advance, however, most of these maps cannot provide sufficient barrier information because the cost of collecting information is very high. To address this issue, I proposed an IoP (*Internet of People*) approach. By this approach, a large volume of barrier information could be acquired from smartphones of pedestrians.

Akihiro Miyata received B.E., M.E., and Ph.D. degrees in engineering in 2003, 2005 and 2008 from Keio University, Yokohama, Japan. From 2008 to 2016, he was with NTT Cyber Solutions Laboratories (now NTT Service Evolution Laboratories) and NTT Resonant Inc. Since 2016, he has been an associate professor of computer science at Nihon University.

Email: [illegible]

Application of Unsupervised Learning with Automatic Clustering for Spatial Analysis and Risk-Mapping of Earthquake Data Distribution in Indonesia

[1]*Barakbah, A.R., [2]Harsono, T., [2]Sudarsono, A.

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Indonesia is one of country which often occurs earthquakes due to the location of Indonesia in the intersection of three tectonic plates: Indo-Australian Continental Plate, Eurasian Plate and Pacific Plate. Furthermore, Indonesia is located in an area called The Pacific Ring of Fire, an area where a large number of earthquakes and volcanic eruptions occur in the basin of the Pacific Ocean. The government and earthquake associations have recorded the seismic data in temporal and spatial for earthquake. Many resources about earthquake data and almost every country have earthquake association, like The Meteorology, Climatology and Geophysics (BMKG) Indonesia, United States Geological Survey's (USGS), IRIS Seismic Monitor, Pacific Tsunami Warning Center (PTWC), West Coast and Alaska Tsunami Warning Center (WCATWC), CUMBAVAC, Earthquakes Today, Dindquist, and many others.

Finding out the earthquake-prone areas is essential, especially in countries that occur earthquake frequently. It is supported by disaster data provided by natural disaster agency or government. One example is the Advanced National Seismic System, which provides the world's catalog of earthquakes from 1960 to the present. These data had lots used to study the frequency measurement of earthquakes occurrence in a region at a certain time interval or often referred to as the earthquakes intensity, predicting earthquakes, managing natural disaster or evacuation, and so forth.

The earthquake's datasets recorded by seismic researches are openly provided. These data are very useful for measuring the intensity of earthquakes. There are many resources that can be found giving information about the earthquake frequency. However, such information has not been enough to provide spatial analysis and density measurement of earthquakes adjusted automatically to earthquake data distribution. This condition makes it difficult to map all the risks, so it creates the lack of participatory development to the earthquake areas that have a high density. The spatial analysis and density measurement that is able to deal with automatic earthquake distribution is important to analyze the networks of earthquakes, earthquake prediction, and early warning systems.

Our research presents a design and development of automatic clustering for spatial analysis and risk mapping of earthquake distribution. In this research, a new clustering algorithm is presented that is able to make clustering with detecting automatically number of clusters. The automatic clustering is then used to spatial analysis and density measurement of earthquake for spatial risk mapping. Our system provides 7 important functions: (1) Spatio-Temporal Earthquake Data Acquisition, (2) Vector Space Data Transformation, (3) Automatic Clustering, (4) Earthquake Density Measurement, (5) Density Visualization, (6), Spatial Analysis Modelling and Creation, and (7) Spatio-Temporal Multidimensional Visualization. The result will be performed in spatio-temporal multidimensional visualization with 3D World Map System.

Biography of a Presenter

received his Bachelor degree from Department of Informatics, Sepuluh Nopember Institute of Technology, Indonesia in 1997 and PhD degree from Graduate School of Media and Governance, Keio University, Japan, in 2011. Since 2001, he works with Politeknik Elektronika Negeri Surabaya (known as Electronic Engineering Polytechnic Institute of Surabaya, or EEPIS), Indonesia, at the Department of Information and Computer Engineering. Currently, he is a Head of Knowledge Engineering Laboratory in EEPIS. He serves as the program chair for annual International Electronics Symposium (IES). Since 2012, he serves as the program chair for annual joint-conference on Knowledge Creation and Intelligent Computing (KCIC). His research interests are Clustering, Intelligent Computing, Semantic Image Retrieval, Socio-Cultural Computing, Reinforcement Learning and Knowledge Engineering. For scientific activities, he involves in some joint-works and collaborative researches with both national and international institution partners. He also is often invited actually as a guest researcher and visiting professor in Keio University.

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A SPA-based AI System for Natural and Social Environment-Analysis and Visualization with "Multi-Dimensional World-Map"

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Humankind, the dominant species on Earth, faces the most essential and indispensable mission: we must endeavor on a global scale to perpetually restore and improve our natural and social environments. One of the essential computations in environmental study is context-dependent semantic-computing to analyze the changes of various situations in a context dependent way with a large amount of environmental information resources.

It is also significant to memorize those situations and compute environment change in various aspects and contexts, in order to discover what are happening in the nature of our planet. We have proposed a multi-dimensional computing model, the Mathematical Model of Meaning (MMM) in 1994. As a global environmental system based on MMM, we have realized "5-Dimensional World Map System" for integrating and analyzing environmental phenomena in ocean and land.

We introduce the concept of "SPA (Sensing, Processing and Analytical Actuation Functions)" for realizing a global environmental system, to apply it to 5-Dimensional World Map System. This concept is effective and advantageous to design environmental systems with Physical-Cyber integration to detect environmental phenomena as real data resources in a physical-space (real space), map them to cyber-space to make analytical and semantic computing, and actuate the analytically computed results to the real space with visualization for expressing environmental phenomena, causalities and influences. The 5D World Map System is globally utilized as a Global Environmental Semantic Computing System, in SDG14, United-Nations-ESCAP: (https://sdghelpdesk.unescap.org/toolboxes).

Biography

Yasushi Kiyoki received his B.E., M.E. and Ph.D. degrees in Electrical Engineering from Keio University in 1976, 1982 and 1983, respectively. From 1984 to 1988, he was with Institute of Information Sciences and Electronics, Univ. of Tsukuba, as an assistant professor and then an associate professor. In 1990 and 1991, he was in University of California at Irvine, as a visiting researcher. Since 1988, he has been with Department of Environment and Information Studies at Keio University, and from 1998 he is currently a professor. Since 2011, he is currently a chair and coordinator of "Global Environmental System Leader Program (GESL)" in KEIO University. He was the Former Dean of Graduate School of Media and Governance, KEIO University from 2015 to 2017. He was a Former President of Database Society of Japan (DBSJ) from 2016 to 2018.

His research addresses semantic computing, environmental engineering, data mining, multimedia database systems, and knowledge base systems. His original semantic model is "Mathematical Model of Meaning (MMM)," and he has more than 130 paper publications related to MMM. He serves as the editor-in-chief of "Information Modelling and Knowledge Bases (IOS Press) from 2002. He has also served as the program chair for several international conferences, such as the 7th International Conference on Database Systems for Advanced Applications and the European-Japanese Conferences on Information Modelling and Knowledge Bases (2000 - Present). He was a "Keynote speaker in 7th IEEE International Conference on Semantic Computing," Sept. 2013, as the title of "A "Kansei Multimedia Computing System for Environmental Analysis and Cross-Cultural Communication."

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My research papers related to semantic associative search methods and systems ("The Mathematical Model of Meaning") are accessible from the following URLs:

http://www.mdbl.sfc.keio.ac.jp/~kiyoki/kiyoki-kansei-0.pdf
http://www.mdbl.sfc.keio.ac.jp/~kiyoki/kiyoki-kansei-1.pdf
http://www.mdbl.sfc.keio.ac.jp/~kiyoki/kiyoki-kansei-2.pdf
http://www.mdbl.sfc.keio.ac.jp/~kiyoki/kiyoki-kansei-3.pdf
http://www.mdbl.sfc.keio.ac.jp/~kiyoki/kiyoki-kansei-4.pdf

Realizing Artificial Intelligence Concepts

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These days Machine Learning (ML) and Data Mining (DM) are buzzwords in job postings while Deep Learning (DL) is a trendy topic in the research community. From many perspectives, ML, DM, and DL are all rooted in artificial intelligence (AI). They are simply techniques and tools to achieve AI principles and concepts. This work focuses on how we put AI theories and concepts into practice.

First, we look at AI concepts and realizations from the historical perspective with notable events from the Turing Machine in the 1930s to the AI programming language Lisp in the 1950s. Next, we evaluate rule-based expert systems such as EMYSCIN in the 1970s, IBM Deep Blue in the 1990s, and Google's DeepMind in the 2010s. Additionally, we show how pop culture such as movies and TV series like Star Trek and the Matrix promote AI to the general public.

Furthermore, we examine how AI theories are realized in the modern day and we evaluate different solutions to implement AI in the different applications that it is suited for. In particular, we look at state-of-the-art solutions to make AI more efficient and effective such as parallel computing, neural processors, and distributed systems. We also investigate different software models in data analytics as well as hardware implementation of DM/ML algorithms. Finally, we discuss the future of AI, its theoretical development and practical realizations.

Biography

Kin Fai Li, P.Eng., SMIEEE, is the Director of a very highly sought after professional master of engineering programs in Telecommunications and Information Security (MTIS) and Applied Data Science (MADS), at the University of Victoria, Canada, where he teaches both hardware and software courses in the Department of Electrical and Computer Engineering. He obtained his Ph.D. in computer architecture, education analytics, and data mining applications. He is actively involved in the organization of many international conferences, including the biennial IEEE Pacific Rim in Victoria and the internationally held IEEE AINA. He is also a committee member and participant in numerous international activities to promote the engineering profession, education, and diversity.

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Operational strategy for the combined solar and ground source heat pump systems(SGSHPS) with phase change heat storage

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Solar-ground source heat pump system (SGSHPS) is a new type of high efficiency, energy saving and environmental protection air-conditioning technology. In this work, experimental studies and numerical simulation on the performance of a SGSHPS operated in different heating modes were carried out. The experimental system was installed in Nanjing of China and solar collectors were coupled with ground heat exchangers (GHE) through an insulated water tank. Four operation modes including ground source heat pump (GSHP), combined operation mode, day and night alternate operation mode and solar U-tube feeding heat alternate operation mode were investigated during winter season. The heat pump performance, solar collecting performance and borehole wall temperature variations were analyzed and compared for various modes. The experimental results indicate that for the combined operation mode, the system operation efficiency during day can be improved by the assistance of solar energy, and the excess solar energy collected during day can be stored in ground by the GHE to improve the operation performance of GSHP during night. The proportions of heat source burdened by solar and geothermal energy are 43.3% and 56.2% respectively. For the alternate operation modes, the temperature resumption of ground surrounding the GHE can be well achieved due to the intermittent heat extraction of GHE or feeding solar heat into ground and thus the overall utilization efficiency of solar and geothermal energy can be improved greatly. During the whole experimental period, the average COPs are 2.37 and 2.72 for GSHP and SAHP operation mode respectively, and the corresponding parameters are 2.69, 2.65 and 2.56 for the combined operation mode, day and night alternate operation mode and solar U-tube feeding heat alternate operation mode, respectively. The average solar collecting efficiency are 43.6%, 47.3% and 38.8% for the combined operation mode, SAHP operation mode and solar U-tube feeding heat operation mode, respectively. Based on the unit modeling, a dynamic simulation program was constructed to investigate the seasonal performance of the SGSHPS operated in different heating modes, the simulation results show that the seasonal average COP are 3.67, 3.64, 3.52 and 3.48 for the combined operation, day and night alternate operation, solar U-tube feeding heat and GSHP mode, respectively. From the view of improving the overall efficiency and increasing heat source fraction of solar energy, the combined operation mode is the best.

Wenbin Yang is a professor at Yangzhou University. He has received Ph.D from Southeast University in HVAC. Then he has been working at Yangzhou University. He has worked as a postdoctoral research fellow at Southeast University and a visiting professor at School of Mechanical and Aerospace Engineering, Oklahoma State University.Prof.Yang's research field mainly involves ground source heat pump(GSHP), underground thermal energy storage(UTES), thermal utilization of solar energy, energy saving in building energy system and heat and mass transfer in soil, etc. He has published over 80 scientific papers, a book and 10 patents. He has been a regular reviewer of many international leading journals including Applied Thermal Engineering, Applied Energy, Energy, Geothermics, International Journal of Heat and Mass Transfer, International Journal of Green Energy, etc.

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A study of the electrical characteristics using by-pass diodes of new structure for photovoltaic applications

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In recent years, the increasingly urgent problem of global warming has heightened the importance of new energy sources to replace oil. One new energy source that has been the focus of considerable attention is solar energy, and the past few years have witnessed a rise in installations of solar-power generation systems in ordinary households. A common strategy for avoiding such degradation of power-production efficiency is to insert bypass diodes in parallel with solar panels to serve as circuits for diverting current flow. Schottky barrier diodes (SBDs), which are inexpensive and boast low losses, are widely used for this purpose, offering the additional advantage of cost reduction. By fabricating SBDs out of a combination of materials chosen to minimize the gap between the work function of the electrode material and the electron affinity of the semiconductor, it is possible to achieve low barrier heights, thus reducing on-voltage. However, lower barrier heights correspond to greater reverse currents; moreover, increased reverse currents caused by rising temperatures increase electrical losses and lead to risks of thermal runaway. Additionally, in some cases the SBDs used for these applications are cheap and unreliable, and depending on the operating conditions, can cause unexplained short circuits in the SBD itself, whereupon the diode fails to exhibit rectifying properties and damage to the solar panels may result.

We propose two types of low-cost, low-loss diodes as alternatives to Schottky barrier diodes for use as bypass diodes connected in parallel with solar-cell panels. Both of our proposed devices are self-biasing channel metal oxide semiconductor (MOS) diodes consisting of an n-channel MOS structure that features three-terminal operation combined with a double diffused metal oxide semiconductor field effect transistor (DMOSFET) cell structure exploiting self-biasing effects. The structures of the two devices are a non-body-short structure that utilizes a self-aligned process for process simplicity, and a body short structure, which requires more processing steps, in which the anode terminal and the p-body layer are shorted together. By reducing the threshold voltage of the MOS gate, these devices feature lower on-voltages and lower rates of growth in the reverse leakage current with increasing temperature, thus preventing thermal runaway. To investigate the properties of our devices, we used a device simulator to analyze their performance as bypass diodes for a solar-cell panel. We found that when a cell was partially shaded, the current flowing to the load side of the photovoltaic panel was significantly improved compared to standard SBDs.

Tsugutomo Kudoh received the Dr. Communication engineering degree engineering from Kyushu Institute of Technology, Iizuka, Fukuoka, Japan, in 2005. He is currently an Associate Professor in Electric Engineering, Kanagawa Institute of Technology, Atsugi, Japan. His research interests include device chip development of low power and devices with simulation.

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Contactless power transfer for dc micro grids and electric bikes

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Contactless power transfer (CPT) technology is gaining more attentions in a variety of applications due to its high mobility and flexibility in transferring commensurate power level with conductive power transfer method. The content of this presentation is twofold, an inductively coupled CPT charger for 48V electric bike and a bidirectional point-of-load dc-dc converter for DC micro-grid.

An inductively coupled contactless charging system for 48V light electric vehicle is proposed. An active load matching method to control the power transfer on the receiving side using a load-matching converter. Small signal modeling and linear control technology is applied to the load-matching converter for port voltage regulation, which effectively controls the power flow into the load. The 250W charging power prototype, which is designed for a charging distance of 80mm and misalignment of 50%, is built, and the meaningful experiments are carried out to reveal the intrinsic characteristics of this series-series resonant inductive power charger in terms of frequency, air-gap length, power flow control, coil misalignment and efficiency issues.

An air-coupled DC transformer (DCX) is investigated for the active load and the DC micro-grid bus interconnection. A symmetrical bidirectional half-bridge topology is proposed to realize the bidirectional power transfer between the active DC load and the DC bus. A Hybrid Modulation Method (HMM) is proposed, which starts at the second resonant frequency at 220kHz to transfer the bus power to the load using frequency modulation (FM) and later on seamlessly switch to phase-shift modulation (PSM) at the maximum FM frequency to send the power from the active load back to the DC bus. The small signal model is derived and linear control technology are applied to the positive power transfer control, and phase model control is applied to the negative power transfer model. The prototype is built with a dsPIC controller, the power flow control of the bidirectional power transfer has been achieved.

Biography

Wei Jiang received his Ph.D. degree in Electrical Engineering from the University of Texas at Arlington, Texas in 2006. From 2007 to 2008, he worked in CP Technologies L.L.C. as a senior design engineer. In 2013, he joined Yangzhou University as a lecturer and founded Smart Energy Laboratory, where he is currently an associate professor and serving as the Dean Assistant on international affairs. He was sponsored by various academic agents of China and the international institutions as a visiting professor to visit the universities in Japan, United Kingdom and the United States. He has served as the reviewer for a number of academic journals and the session chair for internationals conferences. His current research interests include digitalized power conditioning to renewable energy and energy storage devices and microscopic analysis of electromechanical energy conversion. He has published more than 40 papers, and has 11 patents granted.

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Research and development of high solar reflective pigments

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A rapid growth of urbanization gives rise to an increase in energy demand in air-conditioned buildings. As such, building energy conservation becomes a necessity and can be achieved by reducing the heat penetrating into the building. Coating exterior surfaces of building envelope with a high solar reflective coating (HSRC) was found to be one of the measures in which the coating could reduce absorbed solar radiation and thus the surface temperatures. The use of HSRC has gained much interest during the past decades. The key technology of producing the HSRC is about having high near-infrared (NIR) reflective pigments in the coating composition.

This presentation presents the ongoing research and development of high solar reflective pigments at King Mongkut's University of Technology Thonburi in collaboration with National Metal and Materials Technology. Various colourful pigments, for example, blue, green, orange, red, brown, and black, were developed. Syntheses of these pigments were performed via a solid state reaction of oxide materials at high temperature. Their colours and reflectivity tend to strongly depend on materials compositions and calcination temperature. Figure 1 shows the spectral reflectance of those pigments and the values of NIR reflectance vary in the range of 40 – 70 %.

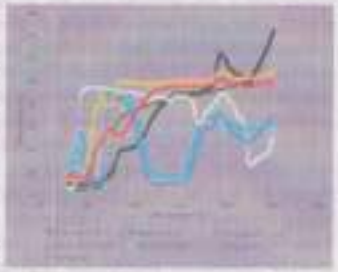

Figure 1 Spectral reflectance of NIR reflective pigments.

Biography (150 words limit) of a Presenter

Pattana Rakkwamsuk received the Doctoral Degree of Science in Electrophysics. He has earned experiences in academic administrative work at KMUTT since 2000 by serving as a division chairman, associate dean in academic, associate dean for research and industrial relations and a long eight years between 2006 and 2014 of SEEM's dean. He is keen at promoting and frequently participate in activities related to good governance as well as high quality teaching and learning in higher education. In addition to the administrative role, he has been actively conducting researches in the field of building energy sciences and energy efficiency. In the past decade, he has paid attention into basic researches related in energy efficient glazing and infra-red reflective pigments.

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Occurrence of endocrine disrupting activities and pharmaceuticals in treated effluents from Taiwanese wastewater treatment plants

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Various pharmaceuticals have been found in surface waters within trace concentrations in the past few decades, and effluents from wastewater treatment plants (WWTPs) are suggested to be major pollution sources. The presence of pharmaceuticals in the aquatic environment has received much attention owing to their biologically active characteristics. To protect water quality and aquatic biota, it is important to monitor the sources and assess potential toxic effects of frequently detected pharmaceuticals and related transformation products.

In this work, yeast-based reporter gene assays and liquid chromatography–mass spectrometry (LC–MS/MS) were used to investigate the variations of endocrine disrupting activities and pharmaceuticals in domestic and hospital WWTPs located in southern Taiwan. Aqueous and particulate phase of wastewater samples were subjected to bioassay and LC–MS/MS analysis following solid phase extraction and Soxhlet extraction. In addition, chlorination of selected pharmaceuticals was carried out and the chlorinated mixtures were tested by bioassays to confirm whether the transformation products may be endocrine disrupting compounds.

Bioassay results demonstrated that selected non-steroidal anti-inflammatory drugs (NSAIDs), including diclofenac, ketoprofen, ibuprofen, and naproxen exhibited significant anti-glucocorticoid, anti-mineralocorticoid, and anti-thyroid hormone activities at low micromolar levels. Also, the chlorinated mixtures of diclofenac and naproxen showed stronger anti-glucocorticoid/anti-thyroid hormone activities and anti-mineralocorticoid activity than the parent compounds, respectively. Anti-glucocorticoid, anti-mineralocorticoid, and anti-thyroid hormone activities were often detected in treated WWTP effluents as well, however, targeted pharmaceuticals were only minor contributors to the activities found in effluent samples. LC–MS/MS results suggested that concentrations of acetaminophen, caffeine, and NSAIDs in WWTP effluents ranged from nanograms to several micrograms per liter. Furthermore, the concentrations of several NSAIDs, such as non-readily biodegradable diclofenac or biodegradable naproxen in hospital WWTP effluents were even higher than those in domestic WWTP influents. More attention should be paid to the NSAID pollution of receiving waters of hospital wastewater effluents in Taiwan.

Pei-Hsi Chou works as an associate professor at the Department of Environmental Engineering, National Cheng Kung University, Taiwan. Her research interest focuses on investigating the distribution, toxic effects, and potential harmful by-products of endocrine active substances found in the environment. Her research group has collected samples from different environmental matrices, including surface waters, sediment, indoor dust, wastewater, etc., and examined the occurrence of diverse endocrine disrupting activities and emerging contaminants using yeast-based reporter gene assays and tandem mass spectrometry analysis.

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Updating genotoxicity evaluation methods

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Genotoxicity tests are requested to carry out in hazard assessment of newly developed chemicals. Many manufactures use genotoxicity tests as surrogate test of carcinogenicity test which is very expensive to carry out. It is general that once the test chemical showed genotoxicity positive, most manufactures hesitate to continue development. Since that, it is very important to update genotoxicity tests to be more reliable.
We developed several reliable new genotoxicity tests. "DNA addactome" is method for detecting DNA adducts comprehensibly by using LC/MS/MS. "SMRT mutation assay" is for detecting somatic mutation by using single molecule real time DNA sequencer. "MDC1 assay" detects DNA damage response very easily. In this symposium I will introduce these methods and discuss about future genotoxicity evaluation methods.

Tomonari Matsuda has his expertise in environmental toxicology studies. He published many papers related to genotoxicity test. He developed several new genotoxicity tests such as DNA adductome, SMRT mutation assay and MDC1-assay. He also intensively studied aryl hydrocarbon receptor mediated carcinogenesis, detection and identification of new endocrine disrupters in the environment, and molecular mechanisms of aryl hydrocarbon receptor responses.

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Family Tasks Analysis on Caring of the Older People with Hypertension

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Background: The impact of aging process are people decrease in physical, psychological, and social conditions. The changes of biological conditions in the older people include gastrointestinal, respiratory, neurological, and cardiovascular system. Hypertension is the most common cardiovascular diseases had by the older people. A family has five tasks on providing health care for the older people, especially them with hypertension. The family five duties consist of duties in identifying health problems, deciding appropriate action, taking care of the older people, maintaining or creating an atmosphere of healthy homes, and making use of a health care services.

Objective of the study: The objective of this study was to describe the family tasks on the health care of the older people with hypertension in Jatimulyo Kricak, Sleman Yogyakarta.

Methodology: This was an observational study with cross sectional design. The number of the samples were 74 respondents selected using total sampling technique. Data was analyzed using frequency distribution.

Findings: The 86.5% of respondents were good in recognizing the hypertension. While 51.4% of respondents were poor in deciding an appropriate action. Furthermore, 51.4% were good at taking care of the older people and maintaining or creating a healthy home. Finally, 45.9% respondents were good in utilizing of a health care service.

Conclusion: In this research, the family tasks were good in recognizing the hypertension issue, taking care of the older people, maintaining or creating a healthy home, and utilizing of the health care services. However, the family was poor in deciding an appropriate performance.

Biography (150 words limit) of a Presenter

Dewi Utari was born in Pacitan, East Java Indonesia, in 1986. She studied the bachelor degree in nursing from Muhammadiyah University of Yogyakarta, in 2010, and the Master Nursing Science degree in family and community nursing from the Kasetsart University, Thailand in 2014, respectively.
In 2013, she joined the Department of Nursing, University of Jenderal Achmad Yani, as a Lecturer. Her current research interests include family, hypertension, self-care, older people, bullying, and self-efficacy. Furthermore, she also doing some community services in the same area with her research.
To develop her professionalism in nursing, she gave her contribution as committee member of nursing institution association in the region of Yogyakarta in 2014-2016 in a major of curriculum. Therefore, currently she involve herself to develop a nursing curriculum which will implemented in nursing department of health faculty of Jenderal Achmad Yani University.

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Training course for standardization of the staff in the neurosurgical emergency

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In Japan, about 30% of the population is expected to comprise of elderly people by 2025. Regardless of inside and outside the country, it is clear that the onset rates of the cerebrovascular disorder increase with aging.

The Primary Neurosurgical Life Support (PNLS) was developed as a simulation training of neurosurgical patient care for medical residents, nurses, and medical staffs engaged in neurosurgical emergencies, in 2009. The general instructive objective of PNLS is settled as "to learn an appropriate management of neurosurgical patients and a leadership between medical team members in neurosurgical emergencies". The specific behavioral objectives of PNLS are designed as follows: 1) to learn life support skills including Basic Life Support using Automated External Defibrillator, 2) to learn airway management and ventilation management, 3) to learn skills of diagnosis and management of cerebral herniation, 4) to discuss managements and treatments of representative neurosurgical cases.

PNLS was developed as a simulation training of neurosurgical patient care for doctors and medical staffs. And it is also useful to train the technical skills and non-technical skills in neurosurgical emergencies which are necessary for patient safety. To keep the quality of neurosurgical nursing, it is useful to attend the training by the many types of job.

Biography of a Presenter

Mayumi Hashimoto, an associate professor in the faculty of nursing, has many experiences to conduct research projects, application for hazard and triage system, development of an educational course for neurosurgery first aid, and the effect by training of urgency determine supporting system, etc.

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Issues for the Development of Quantitative Measurements in Family Research

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There are several issues family researchers should consider with regard to the quantitative approach in future family research. Family events targeted by family studies are subjectively recognized by the respondent as images of empirical reality. Researchers quantify variables by measuring subjective recognition by the subjects. They then analyze the pattern of these variables and how they interact. One problem is deciding from whom the family data should be taken. For example, whether to measure a husband's housekeeping participation by querying the husband, or the wife. From the research that I have carried out until now, the following two points emerged as problems, and are examined here. The first is that the measured value changes according to which individual family member is used as the investigation unit. Next, is how the change in the whole family is evaluated based on the measured values of the individual family member. The outline of the study I conducted is as follows.

The purpose was to examine the efficacy of a program for families with a young child with a developmental disorder. I designed a support program based on the family systems theory (Wright & Leahey, 2005) and previous studies. I developed a support program for families suffering with these difficulties and evaluated its effect. Then the effectiveness of the program was evaluated with a self-controlled design using the "problem-solving ability rating scale for families," which I developed. The measured content is "the ability to solve problems in the family" and the measurement content unit is "the family system" in the evaluation method of the support program. Finally, the unit of analysis is the individual family member, and, in this study, an answer was obtained from each husband and wife separately.

Biography of a Presenter

Tamaki Hamazono, a professor in the faculty of nursing, has many experiences to conduct research projects, development of problem-solving ability scale for a family with developmental-disability child, and development of a supporting program and effect evaluation for a family with developmental-disability child, etc.

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Self-Reflection and Stress Management as Intervention for Reducing Burden on Stroke Caregivers in Self Help Group At Depok West Java

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Background: Non-communicable diseases (NCDs) is the leading cause of death in global. World Health Organization (2014) recorded 38 million (68%) deaths caused by NCDs from 56 million deaths worldwide. In Indonesia, data from Ministry of Health (2012) reported that the proportion of deaths due to NCDs increased from 41.7% in 1995 to 49.9% in 2001 and 59.5% in 2007. The four major diseases of NCDs contribute to 82% of deaths, including cardiovascular 17.5 million (46.2%), cancer 8.2 million (21.7%), respiratory illness 4 million (10.7%) and diabetes mellitus 1.5 million (4%). Cardiovascular disease is the highest cause of death, but the incidence of disability is more common in vascular disease such as stroke. The number of stroke survivors in Indonesia based on Basic Health Surveillance (2013) is estimated that 2,137,941 people (12.1 ‰), this figure has increased from 8.3 ‰ in 2007. The incidence of stroke-related disability causes a high dependence on the survivors that needed long term care. Long-term care provides negative consequences of emotional problems that lead to caregiver burden due to responsibility of family member. Self-help groups as a support system for stroke caregivers have activities such self-reflection and stress management in it.

Objective: This study aimed to reduce burden through self-reflection and stress management interventions on stroke's caregivers through self-help group.

Method: This study used evidence based practice, while the subject was caregivers of stroke survivor. The number of the sample were 30 respondents selected using total sampling technique. The intervention of self-reflection and stress management held in group were given 5 sessions per 12 weeks. Zarit Burden Interview (ZBI) tools was applied.

Finding: This intervention showed decreasing on caregiver burden. The most significant of decreasing burden occurs on seven caregiver with mild-light burden before intervention, then after gaining intervention shows no burden of them with p value 0,002.

Conclusion: Self-reflection and stress management are the combination activities at the same time in the caregiver group. The higher the self-reflection the less negative mood, means self-reflection contribute to the defense of one's stress/ burden. Community nurses have an important role in preventing burden of stroke caregiver by doing screening to know the level of burden.

Retno Lestari has expertise in Community Nursing. She is currently working in Faculty of Health, Universitas Jenderal Achmad Yani Yogyakarta as lecturer in community department. She received Bachelor of Nursing from Muhammadiyah University of Yogyakarta, Indonesia in 2010 and Specialty of Community Nursing, University of Indonesia. She is certified as trainer of palliative (community health care for primary care nurses. She is active in Association of Indonesian Community Nursing.

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Status of Anxiety and Depression among Chronic Disease Patients in Japan

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The World Health Organization has reported that more and more people globally are suffering from depression. Depression is becoming a common mental illness. Depression is also linked to an increase in suicides, and urgent measures are required to combat it. The ratio of patients who have experienced depression in Japan, lower than the West. However, levels of stress are increasing as society becomes increasingly complex and diverse, and now depression has become a common disease that can affect anyone. On the assumption that those living with chronic diseases would feel more mental and psychological anxiety and stress than those treating them may be aware of, leading to increased chances of depression, we conducted a survey of the actual conditions.

In 2011, a survey of actual conditions was carried out with the cooperation of core cancer treatment hospitals nationwide, targeting cancer survivors aged between 30 and 60 who were living with outpatient chemotherapy. In 2017, another actual conditions survey was carried out with the cooperation of DLNs nationwide, targeting chronic dialysis patients over 60. Depression was measured using a HADS yardstick (a questionnaire widely used to screen for depression). Approval was obtained from the Clinical Research Ethics Committee of the researcher's university for the 2011 survey and the 2017 survey. Both surveys were conducted anonymously, and submission of the completed questionnaire was taken as consent.

For cancer survivors, information from 826 patients was used to calculate the basic statistics. The results showed that 13% had anxiety, 18% had depression, and 30% had anxiety or depression, which is a higher figure than the West. For chronic dialysis patients, information from 345 patients was used to calculate the basic statistics. The results showed that 3% had anxiety, 18% had depression, and 27% had anxiety or depression. Compared to cancer survivors, chronic dialysis patients showed lower rates of anxiety and about the same ratio of depression.

Sachiko Tamura is a professor of adult nursing science. Her core research themes have been (1) the development of care for adults who survive with kidney failure, (2) the development of care for adults who survive with dialysis, (3) the development of care for adults who survive with renal transplants, (4) the development of care for adults (elderly) who donate organs, and (5) the development of care for adults who survive with cancer. This presentation is research that will take the main materials for the development of care for adults who survive with dialysis (Theme 2), and the development of care for adults who survive with cancer (Theme 5), rooted in extensive clinical experience.

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A Primary Health Care System in Bunaken Island, Indonesia

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Bunaken Island is basically known for fishery and agriculture industries. In this region, the elderly class has been responsible for primary health care for the residents. Especially, their health care activities in 13 regions in District A have been very active so that the importance of participation of the local residents into the health program is recognized. The purpose of this study indicates that participation of local residents in health care fields with their great interest had affected the health condition in the community. Survey for health condition of local residents was conducted to clarify public health care issues in this region and requirements from local residents.

Prepared census method was conducted to research 28 items which included family structure and condition, drinking water, lavatory, fuel, pregnancy, family financial condition, transportation, immunization, prevention for diarrhea. In the Region A, the participation of local residents was very active and positive impression of planning, implementation, assessment for health program development. In addition, the organization, resource management, ability of administrative operation, and the assessment for local resident need were categorized into 5 levels. In the results, especially, the management for organization had been advanced. Especially, condition of 4 issues: drinking water, lavatory, immunization, prevention for diarrhea were developed so that it was highly appreciated the infant mortality rate was decreased effectively.

Biography of a Presenter

Emiko Shibayama started her career as a public health nurse in Saitama prefecture. She was dispatched to work for a primary health care project upon JICA project both Nepal and Indonesia. Providing a health program using material and child handbook in local regions, her knowledge and skills in public health care and international nursing has been increased. In recent years, she has been interested in studying total health care program in Indonesia to introduce it to the society in Japan.

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"Nursing Student Perception on Family Health Assessment"

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The core of the Indonesian Government Health Program is Primary Health Care (PHC) concept. PHC is the first level of the community health facilities in an attempt to promotive, preventive, curative and rehabilitative. The basic place for the first level is at the community area called Posyandu and Posbindu. Second is the private clinic and Primary Care Unit (PCU). If the health care service at the PCU has the obstacle, the continuing health services up to the Regional Public/Private Hospital. The last is the Central Public Hospital and also the Special Hospital. Currently, one of the Indonesian government health programs is the Indonesian Health Program with the Family approach. A nurse has duties to conducting home visit, health screening, and giving the health education both of the promotive and preventive programs for family. Family health screening is the part of the family health assessment (FHA) that can support of the family nursing process quality.

FHA is the important part of the family nursing process. The program study of Nursing, Faculty of Health, Jenderal Achmad Yani University of Yogyakarta have a vision to be the program study with PHC approach. So, the FHA was build to support the program. Suwarno & Jongudomkarn (2016) has been developed the FHA based on the FHA model of Jongudomkarn & Macduff, (2015).

FHA form has been introduced to the nursing student since the nursing program study established. The first form has been developed with the implementation of Khon Kaen University Family Health Assessment tool (KKU FHA Tool) both of in Thailand and PCU in Bantul area, Bailon and Maglaya, Friedman, Calgary, and Perkesmas (Community Health Nurses) Indonesia. The Nurses perception and knowledge toward the FHA were increased after the training program as long as two weeks. Nurses suggested that the FHA is very important both of at the academic curriculum and PCU (Suwarno & Jongudomkarn, 2016). Currently, There are many style of the FHA form; quantitative and qualitative data and also with checklist form. The content of the FHA are genogram, ecomap, family attachment, family tree wellbeing, five key questions, the level of the independence and the individual assessment for each family member.

The implementation of the FHA modification starting from 2016. The nursing student with internship program (34) respondent has been joined the program. Firstly, the number of the research respondent were 38 respondent. Unfortunately, four respondent has been droup out from the sample of the research because they did not full filled the questionnaires. The sampling technique was used total sampling technique. The program has been conducted as long as seven weeks with pre- and post- questionnaires. The result were nursing student perception has been increased significantly between before and after the learning process. The result of the study indicates that the family health assessment is very important to improve the family health needs and family autonomy. The next research plan is developing the family health assessment with technology-based system.

Suwarno has expertise in family nursing. He is working at the Faculty of Health, Jenderal Achmad Yani University of Yogyakarta. His position as the head of the National and International cooperation UNJANI Yogyakarta and also a lecturer. He has developed the family health assessment tool with Professor Darunee Jongudomkarn, Khon Kaen University Thailand. He also has a guidebook of family health nursing process with the Indonesian copyright license.

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Communication Support System for Deafblind persons

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Deafblind persons experience challenges with communication in varying degrees. Communication is the largest barrier to their independent living. Deafblind persons use various kinds of communication media depending on the age and order of onset of deafness and blindness. Finger Braille is a kind of tactual communication medium for the deafblind persons who had onset of blindness at first. In Finger Braille, the receiver's index, middle and ring fingers of both hands function like the keys of a Braille typewriter. The sender dots the Braille code on the fingers of the receiver as if the sender types on a Braille typewriter. Then the receiver recognizes the dotted Braille code. The skilled deafblind persons can communicate words and emotions.

The objective of this study is the development of communication support systems which employ the skin contact communication of deafblind persons, because skin contact is the only form of non-verbal communication for deafblind persons. The communication support systems consist of a Finger Braille teaching system and a Finger Braille recognition system. The teaching system recognizes the speech of a non-disabled person and displays the associated dot pattern of Finger Braille. The non-disabled person can then dot Finger Braille on the fingers of the deafblind person by observing the displayed dot pattern. The recognition system recognizes the dotting of Finger Braille by the deafblind person and synthesizes this tactile communication into speech for the non-disabled person.

The intent of the support device is to assist not only verbal communication but also non-verbal (emotional) communication. To assist in emotional communication, we have been developing an emotion teaching system and an emotion recognition system. The emotion teaching system teaches the non-disabled person to express emotions. The emotion recognition system recognizes the emotions dotted by the deafblind person and presents the information as synthesized speech for the non-disabled person.

Biography

Prof. Yasuhiro Matsuda obtained his Ph.D. degree from the University of Tokyo in 2007. He joined the Department of Welfare Systems Engineering at Kanagawa Institute of Technology in 2000, and later joined the Department of Robotics and Mechatronics. Now, he is a professor and department chief of the Department of Clinical Engineering. Prof. Matsuda's expertise is in the field of assistive technology for deaf and/or blind persons and measurement engineering. Currently, his main research interest is in the development of the communication support system using Finger Braille for deafblind person and tactual communication tool for elderly person.

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Factors influencing older people participation in Community Healthcare Program (Posyandu) at Yogyakarta

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Background : Community Healthcare Program (Posyandu) for older people aims to empower elderly on accessing basic health services. However, it is known that not all older people willingly access Posyandu as a way to improve their health status. This study aimed to identify factors influencing Posyandu participation among older people in Pandak Yogyakarta, Indonesia.

Methods : A descriptive quantitative study was conducted with 43 participants who were recruited using a purposive sampling technique. Spearmann rank and linear regression was used to analyze the data.

Results : The findings found nine factors influencing elderly participation in Community Healthcare Program (Posyandu) in Bantul Yogyakarta- namely (a) gender; (b) marital status; (c) education level; (d) occupation status; (e) knowledge level; (f) distance between home and Posyandu' s location; (g) facilities; (h) family support; (i) health worker and cadre' s attitude; and (j) health status. The result of linear regression test found the most influence factor for older people on participating posyandu was health worker and cadre's attitude with significance value of 0,00 (p<0,05).

Conclusion : Findings indicated that personal, family support, and healthworker' s attitude in Posyandu were predictors to intention to participating posyandu. Interventions targeting large number of elderly population and further studied to understand what needs to be done by governmental institutions and community to increase older people participation in Community Healthcare Program (Posyandu) are also recommended.

Biography

Anastasia Nurti Sukmawati is currently working as a Nursing Lecturer at Faculty of Health, Universitas Jenderal Achmad Yani Yogyakarta since 2009. She has expertise in Gerontology Nursing. She received Bachelor of Nursing from Dadjah Mada University-Yogyakarta, Indonesia in 2007 and Master of Nursing was obtained from Western University of Australia in 2014. She developed handbook for student practice and active in Kisi Indonesia Chapter Yogyakarta. Her research interests are community health, social determinants of health, HIV/AIDS, Dementia, and geriatric nursing.

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Next-generation Engineering Education in Disruptive Era

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At present, the world has come a long way to the third revolution of Digital Technology (20th-21st century) and it is expected to enter the 4th revolution of the Artificial Intelligent (AI) and Automation due to exponential growth of technology. It is estimated that computers will take over the human functions with AI within the next 50 years and the new innovation shall replace human activities in everyday job. The rise of robots and combination of computing power, algorithm and robots threaten the future of human beings. In order to keep in pace with the exponential growth of disruptive technologies that shall change the ways of industrial manufacturing and human life style, education must need disruptions especially in sciences, engineering and technology to prepare for intense period of many transformations in order to prepare manpower to work suitably in the job market. Several trends for learning of disruptive technologies in education of sciences, engineering and technology shall be discussed. The growth in the intelligence and capabilities of machines presents both a threat and an opportunity. Educators have to reconstruct courses in line with the emerging and disruption of engineering and technology in each discipline. Two examples of pride in engineering trainings for the undergraduate levels shall be given. One of them concerning the summer internship training in Imaging Technology in Kanagawa Institute of Technology shall be elaborated.

Biography

Dr. Suda Kiatkamjornwong is professor emeritus (Professor A1) of Polymer Science and Engineering. She received Imaging Technology training from Swiss Federation Institute of Technology Zurich, Switzerland and Polymer Science and Engineering from Lehigh University, U.S.A., post doctorial research in Imaging Technology and Printing from many universities and research organizations in Japan and Australia. She conducted her research in polymer synthesis, polymer engineering, digital imaging and printing. Her current research interest is in the areas of hydrogel syntheses, 3D printing and syntheses of new functional polymers. At present, she has published more than 140 technical papers in ISI refereed journals with an h-index =26 and about 3000 citations. She was the coordinator for CU-Canon Technical Cooperation, PTT-CU Technical research. Currently, she has been the coordinator for KAIT-CU Technical Cooperation in Imaging Technology under MOU since 2012. She can be contacted at the Faculty of Science, Chulalongkorn University, office phone number +662 218 5587. Her e-mail address is ksuda@chula.ac.th.

Engineering design education in laboratory class

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For most classes in Japanese universities, especially in engineering departments, professors normally lectured their knowledge to their students with little action from students. For the laboratory classes, students were asked to do experiments just by following the experimental instructions given in texts. The quality of classes was not questioned in the past. However, in recent years, increasing number of engineering departments are obtaining accreditation from JABEE (Japan Accreditation Board for Engineering Education), which regularly checks the educational program, including the quality of classes. To obtain the accreditation, each department has to meet certain requirements and has to have classes in which students learn engineering design in a field they specialize. In this talk, one of the classes to study engineering design is explained.

Classes in universities could be divided into four groups: Lecture Type, Communication Type, Classical Laboratory Type, and New Laboratory Type. Lecture Type is classical class in which professors lecture their knowledge to their students. Communication Type is new type of classes where students are actively involved. In Classical Laboratory Type, students are asked to do experiments which are written in the experimental instruction. In New Laboratory Type, professors give the final goal of the experiment, but the process of getting to the goal is not given. Students are going to discuss how to get to the goal and design the experiment so that they reach the goal. In this talk, only New Laboratory Type class is explained.

In New Laboratory Type class, final goal of the experiment is given. Students are divided into many groups. Normally each group consists of 3-7 students. They work together to design a process to reach solution to the problem. The process is similar to the process in Communication Type. The main difference is that in New Laboratory type, students will do some kind of experiments, but in Communication Type, they do not do experiment. The role of professor is slightly different. When students come up with a solution to the problem, they also propose experimental procedure. Professors have to check if the procedure is safe or not. For example, if the students' proposal involves chemicals which are not safe to handle, professor might ask students to change the procedure so that safer chemicals are used.

Yasuro Ikuma is Professor Emeritus, Kanagawa Institute of Technology. He received M. S. from Tokyo Institute of Technology, Japan and Ph. D. from University of Utah, U. S. A. He had teaching position at KIT from 1981 to 2015. His main research effort has been concentrated on ceramics. In the last ten years, he has been studying the surface structure of rutile TiO_2 photocatalyst.

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Internationalization Modeling To Improve Higher Education Institution's Competitiveness

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Globalization drives Higher Education Institutions (HEIs) to compete in the global market. Internationalization is an urge matter for HEIs regardless considering its size. "Internationalization isn't just for the best universities, it's now something that every university needs" is a quote by Mohylov *et al.*, (2011) that is irresistible. Internationalization of HEIs basically is the acceptance process to globalization in education. Furthermore, the internationalization process is seen as the most prominent platform to achieve the 16 most critical "21st-century skills" which is defined by The World Economic Forum as the new vision for education. This paper focuses on the internationalization strategies of HEIs to be competitive in Asia, even though there is no best model for it.

Comprehensive Internationalization (CI) is defined as commitment and action to infuse and integrate international, global and comparative content and perspective throughout the teaching, research and service missions of higher education (Hudzik, 2012). This is a process that brings two aspects internal and external. Internally, HEIs should be prepared with the changes structural, cultural and others. While externally, HEIs becomes more international by having collaboration with other international partners, projects and recruitment of foreign students. According to Huang (2007), the pattern of internationalization in Asia are categorized into three patterns: 1) an import-oriented type, 2) an import and export type, and 3) a transitional type. The import-oriented type is country that imports educational programs and institutions from other countries mostly from the West (Vietnam and Indonesia). The second is country that imports higher education activities from Western countries and at the same time export their higher education activities to other Asian countries (Singapore and Hong Kong). The third type is country that tends to import more educational services than they export, but are keen to export their own higher education services (China and Japan).

The paper proposes the application of "DCI Business Model" or "Dynamic Comprehensive Internationalization model". The DCI is enabled HEIs to be more flexible and responsive because its multi leveled create an interconnection, independent and adaptation. It provides concepts and tools to examine dynamic systems in all their complexity, richness, diversity, and development.

Biography of a Presenter

Agustina Fitriastingrum is the senior lecturer of Economics and Business Faculty, Universitas International Batam (UIB), Indonesia. She finished her doctoral degree from Graduate School Business of University Tunku Malaysia. Project Management and international business studies in Asia and emerging countries become her interest for teaching and focus of research. Her researches in the internationalization of higher education institutions had been disseminated in the national and international level. She had assigned as the Head of International Office of Universitas Internasional Batam before her current affiliation as the Quality Assurance Supervisor of Economics and Business Faculty of UIB.

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Interactive Integral Photography Holographic Pyramid System Using a Game Engine

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A new holographic pyramid system that can display an animation of an integral photography image that appears to be floating is established by developing a shader using a game engine (Unity 5).

The four surfaces of the pyramid display the animation of the object from the front, back, left and right sides. A camera array consisting of 8 × 8 = 64 virtual cameras are placed in the front, back, left, and right sides of the object. A memory area called a render texture of 4096 × 4096 pixels is assigned to each camera array. Each render texture is divided into 8 × 8 = 64 viewports (512 × 512 pixels each). The images visible from different cameras are drawn on each viewport. Each render texture is mapped to a corresponding plane (front, left, right, or back). All animations are autostereoscopic and display horizontal and vertical parallax.

In holographic pyramids using pre-rendered animations, interactions cannot be added. We solve this problem by using a game engine. The user can rotate an object clockwise and counterclockwise by operating a keyboard.

In a conventional holographic pyramid system, the four sides of a square pyramid are arranged so as to be parallel to the four sides of the liquid crystal display (LCD). However, this method is not suitable for displaying tall objects because the height of the displayed characters cannot exceed half of the short side of the LCD. By rotating the square pyramid 45° with respect to the LCD, 3D objects such as human figures can be displayed and enlarged by up to 1.4 times even with the use of a same sized LCD (Figure 1).

Figure 1: Comparison of character sizes displayed on a holographic pyramid. ©UTI/UCL.

Biography of Presenter

Shohei Arzaku received his B.E. degree from Kanagawa Institute of Technology in 2017. He is currently a graduate student at the university. His field of interest is interactive 3D image display.

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Image Ranking Algorithms: How Image Search Engines Work

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Image ranking algorithms are essential in areas such as online image search based on a query, identity verification, product identification, and many others. In this presentation we focus on studying image ranking algorithms used by major search engines, which attempt to categorize images based on relevance to a textual search query. This is a hard problem because new images are constantly uploaded to different websites on the Internet and the search engine must therefore constantly evaluate how these new images relate to old images and to textual search queries.

In the first part of our presentation we study the current methods that search engines employ in order to solve this problem. In particular, we show that major search engines rank images either by establishing correlations between images and the text around the images in a given online document, or by evaluating visual similarity between different images and grouping similar images together, or by studying user behaviour during or after the image results are displayed for a given query, or by using some combination of the above mentioned methods.

In the second part of this presentation we show how such methods for ranking images can be abused. In particular, we show how a popular search engine, which utilizes machine learning, user behavior, and PageRank is susceptible to a dataset poisoning attack. This is a type of an attack on the machine learning model where malicious users introduce new images into the search results that are not actually relevant to the search query with the intention of confusing the learning model.

Biography

Marina Darkovsky Ibrishimova is currently pursuing her PhD of Computer Engineering. She holds a Master of Engineering in Information Security and Telecommunications. In December of 2017 she proved the existence of a secret, smaller private key in the RSA encryption algorithm, which was a result not previously known to the public. While working on her Bachelor's degree Marina founded the software development company Bitrus Inc, which won several development awards including a Best Open Graph app at the Facebook Developer's World Hack in Vancouver 2012. This was a competition between 200 software engineers from Western Canada and the United States. In 2018 Bitrus Inc won a $C350 RFP for an enterprise level software, which solved a problem in the healthcare industry. The software was licensed to Vancouver Island Health Authority.

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High Accuracy Indoor Positioning Implemented Data Transmission Function using Diffused Sound

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The authors have developed an accurate indoor positioning system with an error of just a few cm by using sound. In GPS / GNSS, which is an outdoor positioning system, satellite orbital data and positioning correction data are included in radio waves as positioning signals. It is possible to a realize data transmission function since the sound wave is the same as the radio wave.

This paper presents the method and a new system that achieves both positioning and data transmission functions using the same configuration.

The sound source is modulated based on sensor data before the spread spectrum process. On the receiving side, the positioning calculation is carried out by using the timing of the reception, which is obtained by correlation calculation, and data extraction is conducted by inverse diffusion and demodulation of the received signal. Before implementing the software, the validity of the data transmission method was confirmed by simulation.

Software design, development and implementation were conducted for the reception operation, and a sound transmitter was developed to complete the experimental system.

Characteristic experiments are performed by changing the number of sound sources and usage environment, confirm positioning and data transmission functions, evaluate their characteristics, and show the validity of the proposed method.

Biography of a Presenter

Takeru Kadokura was born in Kanagawa Japan on March 13, 1996. He enrolled in Kanagawa Institute of Technology in 2014 and obtained a bachelor's degree in information engineering in 2017. He is currently a master student at Kanagawa Institute of Technology. He is mainly studying indoor positioning technology. He won the Best Paper Award at AMSEMT 2017.

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Sign language recognition performance by machine learning using multiple classifiers

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Automatic translation for sign language is required as much as automatic translation for foreign languages. Motion capture for sign language motion is the first step in developing automatic translation of sign language. Automatic translation of sign language is the final goal, but as it is difficult with current technology, we are creating a tool system to evaluate whether sign language motion is correct behavior.

One of the key features of our proposed method is using an optical camera and colored gloves for detection of sign language motion. The optical camera is implemented in a smartphone. This makes it possible to remove the limitation of using area and occasion as a machine translation tool.

The authors propose two new schemes. One is to add the two feature elements, that is, hand direction obtained from the angle between the wrist and fingertips, and hand rotation calculated from the visible size of the palm and wrist incorporating the four conventional elements comprising motion trajectory, motion velocity, hand position and hand shape. The other is integrating the results which is obtained by each classifier to enhance the recognition performance. The six kinds of classifiers have been applied to 35 sign language motions.

A total of 3150 pieces of motion data, that is, 2100 pieces of motion data as training data and 1050 pieces as evaluation data, were used to evaluate the proposed method. The recognition results were examined by integrating the feature elements and classifier. The success rate for 35 words was respectively 76.2% and 94.2%, for the selection of the first ranked answer, and the selection of the first, second or third ranked answers. These values suggest that the proposed method could be used as a review tool for assessing how well learner have mastered sign language motions.

Biography of a Presenter

Tatsunori Ozawa graduated from Kanagawa Institute of Technology in 2016. After that he entered Kanagawa Institute of Technology graduate school in 2017. He is engaged in research on automatic recognition of sign language from undergraduate 4th grade. He describes the recognition performance of sign language by multiple classifiers in this journal. In future he is considering sign language recognition by deep learning.

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A Method for Extracting User Roles based on User's Activities on Online Technical Communication

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An immense amount of information has been generated on the Web, and the importance of efficiently accessing the information that users need is becoming greater. In the field of information recommendation, the collaborative filtering method has been focused on. Meanwhile, by using the various information sharing services available on the Web, many users are actively sharing their knowledge online. Especially in the process of collaborative works, such as software development, technical communication services on the Web are widely used for sharing knowledge and information. In technical communication, users are involved in activities such as participating in meetings, holding discussions, voting, and uploading files for information sharing.

Here, we think the distances of a user's relationships affect the methods of obtaining and utilizing shared information in such online activities. For example, if there are users who have the respect of many other users, it is reasonable to primarily utilize their knowledge to achieve the goal. However, it is not enough to focus only on the similarity of users' preferences, like the collaborative filtering method for finding influential users whose advice is highly respected by others. In addition, we have to define metrics for calculating the distance of users' relationships in their online activities.

In this study, we propose a method for calculating the distance between users in a communication group, in which the users' roles, such as leader, moderator, supporter, and facilitator, that are extracted from their technical communication history, are considered. Our proposed method provides personalized information based not only on the user's similarity to other users' preferences, similar to in the collaborative filtering method, but also on the user's relationship with other influential user's roles. In addition, we discuss about the method for evaluating how knowledge from influential users are utilized by other users to improve their works. In the experiment using Slack and GitHub, which are Web services for technical communication and version control of user generated products, respectively, we evaluate the feasibility of the proposed method.

Biography

Hayato Tsukiji graduated from Kanagawa Institute of Technology in 2017. Presently, he belongs to the Graduate School of Engineering, Kanagawa Institute of Technology. He is interested in database system and data analysis. He is conducting a research on finding key person from online community in technical field and sharing their knowledge efficiently.

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Cross-modal interaction between vection perception and olfactory stimulation

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Vection is visually induced illusion of self-motion, which may be felt when viewing a screen displaying patterns with optical flows. It is known that vection is induced not only by visual stimulation but also by auditory and somatosensory stimulation. In recent years, many trials on displaying scents with movies in virtual reality (VR) systems have been conducted. In immersive environment such as VR systems using a head mount display (HMD), vection is frequently induced.

On the other hand, it has been reported that a certain scent affects the movement of the body, and the scent is thought to have some influence on vection which is the stimulus causing the sense of motion. However, there are few studies on the relationship between vection and olfactory stimulation.

The aim of this research is to investigate the effects of scents on vection perception. We use the olfactory display to emit scents to the subjects. Since the olfactory display used in the experiments emits very small amount of fragrance in a very short period, it enables the users to feel scents for a long time without adaptation. In experiments, the subjects sit in front of the olfactory display wearing HMD. And they look at the two types of motion images, i.e., expanding and converging optical flow respectively, for forty seconds under the conditions of with scents, sound, and without anything. The scent and sound are presented to the subjects for seventy seconds, from thirty seconds before the beginning of playing the motion images to the end, in case of with scent or sound.

As a result, it is found that the scent stimuli do not affect the perception of the vection, but the vection stimuli affect the scent perception. And the magnitude of this influence differs depending on the scent.

Aoi Aruga graduated from ICT Specialist Special Major, Department of Information Media, Faculty of Information Technology, Kanagawa Institute of Technology. She entered the Graduate School of Information Engineering, Kanagawa Institute of Technology. She studies about sensory information presentation and interaction between olfactory sense and other senses.
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Emotion Extraction from user's Utterances in Microblog for Content Recommendation

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In order to realize an efficient recommendation on e-Commerce site, it is important to consider user's emotion to the target contents (items). There are many researches that has been trying to extract information that evokes user's empathy and interest from enormous users' utterances on information services such as microblog and review sites, since such user' utterances are deemed to often mention about impressions and evaluations that users embrace for the target contents. Analyzing user's emotions for target contents makes it possible to recommend potential contents that user likely has interest in. However, for the recommendation purpose, it is insufficient to consider only the similarity of emotions by different users like collaborative filtering, since it is not consider correlation between user's emotion and characteristic of contents.

In this study, we propose a method of extracting emotion from user's utterances in microblog for the purpose of content recommendation, where emotion models of users that considers emotions embraced for contents are constructed from a history of user's utterances in microblog, and user's emotions to contents are extracted based on the emotion model. Furthermore, characteristic of contents are calculated as the average of emotion values that different users embraced.

In the proposed method, in addition to emotion values for unknown contents, which can be calculated using collaborative filtering approach, correlation values between user's emotion and characteristic of contents is applied using content filtering approach for the final recommendation. As a result, our method can improve accuracy of recommendation results by finding unknown contents that would satisfy user's emotions. In this study, we verify the feasibility of the proposed method through experiments using Twitter, which is one of microblog services available on the Web.

Biography

Shun Fujita graduated from Kanagawa Institute of Technology in 2017. He belongs to the Graduate School of Engineering, Kanagawa Institute of Technology. His research area is related to database system, data mining, recommendation system, and so on. Presently, he is conducting a research on content recommendation using emotions of users.
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An Automatic Testing System for Server Failures using Virtual Execution Environment

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This paper presents solution support of system failure using a virtual testing environment. Presently, it is possible to build and configure a server system in a programmable way, for example, by using cloud services such as Amazon Web Services and Google Cloud Platform. In such a server environment, the detection of server failure can be automated to some degree, but in many cases, humans are involved in investigating the cause of server failure. It is important to quickly identify the cause of server failure in system operation; however, a process of troubleshooting usually requires a lot of trials and errors. Furthermore, the operations in the server are irreversible in the process of troubleshooting, which makes it more complicated and harder to resolve the server failure as well. Thus, it is important issues to reduce the human cost of troubleshooting according to the scale of the server failure.

In this study, we propose an automatic testing system for server failure using a virtual execution environment, where an active environment is not affected by the many of server operations in the process of troubleshooting. It is expected that, by incorporating with a knowledge-based system of the troubleshooting, our method allows system administrators to reduce the cost of investigating the cause of server failure and resolving it. The proposed method consists of the following four steps: (1) a knowledge-based system in which the system log messages of server failures in the past and the group of operation commands used for the solution are stored is constructed. (2) when a server failure is detected, the log messages similar to the one from current server failure are searched from the knowledge-based system, and groups of operation commands associated with each log message are extracted and ranked according to the similarity scores of log message. (3) a virtual file system, where the state of the active environment is almost preserved, is dynamically created from the active environment using the Union File System. (4) after executing operation commands in each group in the virtual test environment without affecting to the active environment, some candidates of groups of operation commands that were deemed to be effective for solving the server failure are suggested to the server administrators.

The feasibility of the proposed system is also investigated by experiments using our prototype.

Biography

Takayuki Kusai graduated from Kanagawa Institute of Technology in 2017. He belongs to the Graduate School of Engineering, Kanagawa Institute of Technology. His interests of research are evaluation of software performance, administration of server system, e-learning system for programming, and so on.

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Development and evaluation of a gustatory display using a piezoelectric device

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In this research, we developed a gustatory display using piezoelectric elements. In this gustatory display, it is possible to control the ejection amount and the ejection time by a computer.

In addition, the gustatory display can adjust the temperature of the taste solution. Therefore, we measure the ejection performance of the gustatory display and the effect of the ejection of the solution due to the temperature change. Next, the cognitive threshold is measured by three taste test methods, a filter paper disc method using a taste disc, a dripping method using a gustatory display, and a dripping method using a pipette, the first two are conventional taste testing methods.

In the piezoelectric element incorporated in this gustatory display, there are 100 holes empty, with diameter 9μm. The structure of the gustatory display consists of a main body including a piezoelectric element, a temperature sensor, a thermocouple, and a handheld part. The taste solution can be loaded in 10.65 ml, and by attaching a lid to the gustatory display main body and ejecting it, it is possible to eject liquid while preventing leakage to the outside of the container.

In the taste presentation method by three methods, the taste discrimination step differs depending on the taste quality depending on the position where the tongue hits. Taste discrimination ability was measured, and experiments were conducted to present 4 taste to the tongue using 3 methods. When comparing by the three methods, it tended to sensitively distinguish the taste in all four taste qualities by the gustatory display and the dropping method using the micropipette.

Yukito Nagakusa: Graduated from Department of Information Media, Department of Informatics, Kanagawa Institute of Technology in 2018 in April 2018. Currently he entered Department of Information Engineering Kanagawa Institute of Technology. Currently he mainly study about taste. He is developing and experimenting a gustatory display.

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Development of an olfactory display using a piezoelectric device

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The olfactory display currently being developed is divided into two kinds of perfume concentration control methods. One is "ejection amount control system" which controls the concentration of scent by changing the ejection amount of fragrance, and the other is "air mixing system" which controls the concentration of scent by mixing odorless air to scent.

In this research, we proposed new ejection amount control system that using a piezoelectric device, and developed an olfactory display which enables to convey scents to the user by emitting liquid fragrance.

Figure1 Schematic of olfactory display

This olfactory display conveys scents to the user by blowing misty fragrance. A piezoelectric device has small holes and spray liquid fragrance in mist form. It has detailed ejection control, and enables to spray liquid fragrance in unit of tens Pico liters. This ejection amount control system is very excellent compared with other olfactory display. Also, when using a fan, the air flow becomes a spiral and the wind speed varies. Therefore, the wind speed is made uniform by attaching the fan to the upper part and refracting the air flow.

Generally, an olfactory display treats fragrance, so it must be frequently deodorized. If the olfactory display has a complicated mechanism, maintenance such as disassembly and washing will be very difficult. But, the mechanism of this olfactory display is very simple. It will make maintenance a lot of easier.

Shigeaki Nakamura graduated from department of information media, school of informatics at Kanagawa Institute of Technology in 2018. He currently majored in information engineering, and engaged in research of an olfactory display in the master's course at the university.
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A Basic Study of a Conversational Agent Speaking with Ambiguity

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In recent years, conversational agents are getting popular, guide robots in shops and museums, virtual assistants installed on a smartphone, smart speakers in a living room and so on. By using these agents, we can know facts about something easily. In particular, we can acquire a specific answer by asking such as "How's the weather today?" and "How do I get to the station?"

However, when it comes to communication, this agent's ability of "replying with a specific answer" causes a problem: *conversations between agents and people do not last long.* The user has no reason to ask the agent again because sufficient information is provided.

To address this issue, we propose a conversational agent speaking with ambiguity. This agent replies to user's question ambiguously to encourage the user to keep the conversation.

Genki Kurita received B.E. degree from Nihon University in 2018. His current research interests include user-friendly computing and human agent interaction.
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A Presentation Method of Asynchronous Viewer's Voice in a Video Viewing System

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Today, over 10 years have passed since video sharing service such as YouTube was introduced, but various videos are still uploaded now. In recent years, a designation like "YouTuber" was born and attracted more attention. By many of these video sharing services the user who watched video can contribute comment, and a function promoting the communication between users is introduced.

Under such circumstances, many studies on communication methods on TV and video sharing services have been made. Bannai et al. is developing a WakWak Tube as a communication tool for asynchronous viewers of the same video. This system acquires the movement of viewer's body, reflects it in the two-dimensional graphic called avatar, and displays it together with the video. A body motion recorded as an avatar is stored in association with the video reproduced at that time, and when the same video is reproduced again, it is displayed as a past avatar. Therefore, this system can display the avatar those of users viewing the video in real time and those of other viewers who viewed the same video in the past. In addition, the user can touch past avatars via avatar. Though these functions, it is proposing a system that can provide a sense of connection and presence by providing a place where communication with asynchronous other viewers is possible.

Therefore, in this research, we investigate whether sense of connection and presence are improved by adding a function that be able to handle the user's voice in addition to the body motion and interaction function to this system and associating it with the avatar.
In this paper, we conducted an evaluation experiment on the newly implemented voice processing function.

Yuya Matsunaga graduated from Department of Information Media, Kanagawa Institute of Technology in 2016. Currently he belongs to the Department of Information Engineering at the same university. He is developing an asynchronous communication system with others.
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Study of Utilization of Web Scrapping and User Acceptance to Job Seeking Web Application

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Currently in Japan, job seeking become a difficult and tiresome activity. Job opportunities can't keep up with the alarming ever-increasing number of job applicants create a difficult situation form both job seeker and employer. Looking for suitable individual to fill a slot in a company become tough because the number of prospective applicants keep increasing with various qualifications. Job seeker also wait for unknown time because of this situation.

We developed a system to able to recognize the important trait of an applicant and rank system to make decision making faster and more accurate to solve this problem. This system is developed using web scrapping to gather job application information and SAW Method. When implemented and tested against 100 sample of respondent using questionnaire, we found that the website quality contributes almost exclusively towards user satisfaction and other contribute positive but superficial.

More development and research should be focused more on that aspect in developing job seeking application and more study need to conducted to identified aspect that contribute positive impact upon satisfaction and therefore improving job seeking experience for either job seeker and employer.

Dina Setiana was born on September 26, 1994 in Tanjung Balu. She is the second child among three siblings. She built up his elementary education at SDN 004 Tanjung Balu and graduated in 2006. She studied in SMPN 1 Tanjung Balu for his middle school and graduated in 2011. After that, she graduated high school in SMK Budi Mulia in the year 2014. Currently, Dina Setiana is taking up thesis under the Department of Information Systems, Faculty of Computer Science in the Universitas Internasional Batam.
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Cytotoxicity evaluation of nanodiamond doped with ethidium bromide

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Many currently used medicines have poor selectivity to diseased sites that are targets such as cancer and are known to affect on both normal and diseased tissues. In some cases, cancer cells become resistant to these drugs of which usage may be limited. In order to solve to these problems, it is necessary to develop a novel drug delivery system (DDS) that is expected to reduce side effects while retaining drug efficacy.

Nano diamond (ND) has higher biological compatibility than the other carbon based nano particles. Because modification of surface functional groups of ND is relatively facile, it is often used as an efficient-carrier of medicinal drugs. To data, NaOH were used for efficient adsorbents on nanodiamonds. In this study, we focused on ethidium bromide (EtBr) as a adsorbent and examined surface modification of both positively charged ND (pND) and negatively charged ND (nND) with EtBr and their biochemical characters.

After alkali treatment of pND and nND, they were mixed with EtBr (weight ratio ND:EtBr=5:1), respectively, and were allowed to stand at the room temperature. Based on the UV absorbance measurement of the supernatant, EtBr was found to be adsorbed on pND and nND with efficiency of 22% and 95%, respectively. Evaluation of EtBr adsorbed on ND was using FTIR and found that appear the EtBr's peak compared with nND's data.

nND-EtBr was revealed to show remarkable cytotoxicity over a dose of 12.5 μg/ml (Equivalent EtBr concentration was calculated as around 2.38 μg/ml) for 48hr treatment to hamster normal lung cell line (CHL/IU), with cell viability of 63%. Cytotoxicity of nND itself was also confirmed to this cell line, but its viability was higher than that of nND-EtBr. Among pND and pND-EtBr, there were little difference regarding to cytotoxicity. Moreover, at the concentration of 25 μg/ml nND-EtBr (EtBr=4.75 μg/ml), we also confirmed the fluorescence emission derived from EtBr in cytoplasm of living cell.

As results, we revealed that nND-EtBr complex introduced the higher cytotoxicity than free EtBr and intant ND. And, we confirmed that this complex was penetrated in the living cell. Mechanism of cytotoxicity is now under investigation.

Ms.Mizuki Mori was received a bachelor's degree in Engineering from Kanagawa Institute of Technology, Kanagawa Japan, in 2016. She is in the 1st year of master's course in an applied chemistry division. She researches about mechanism of genotoxicity of EtBr related compounds, and now investigates the cytotoxicity of EtBr adsorbed ND.

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Detection of endocrine disrupting activities in indoor dust from air conditioner filter using bioassays

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There are many kinds of chemical compounds in indoor environment. Indoor dust, which is absorbed by human body via inhalation or ingestion, may contain carcinogenic or endocrine disrupting substances and pose a threat to people staying indoors for a long time. To understand the occurrence of endocrine disrupting compounds in indoor dust of Taiwan, this study used bioassays to detect androgen receptor (AR), estrogen receptor (ER), thyroid hormone receptor (TR) and aryl hydrocarbon receptor (AhR) disrupting activities in dust collected from air conditioner filter. The sampling sites included three public areas and four households. Concentrations of polycyclic aromatic hydrocarbons (PAHs) and polybrominated diphenyl ethers (PBDEs) in indoor dust were also analyzed by gas chromatography mass spectrometry (GC-MS).

The results of bioassays showed that significant AR antagonist and AhR agonist activities were detected in indoor dust samples. In particular, dust sample from an internet café exhibited the highest anti-androgenic activity (2.4 μg-flutamide equivalent/g-dust) and AhR agonist activity (37.7 μg-β-naphthoflavone equivalent/g-dust). Furthermore, no ER, AR or TR agonist activities were found in most of the dust samples. GC-MS analysis revealed that PAHs and PBDEs concentrations in indoor dust samples from Taiwan ranged from 480.7 to 1903.1 ng/g and 42.5 to 6036.8 ng/g, respectively. The highest PBDEs concentration was found in indoor dust from a research office. Our findings suggested that the issue of endocrine disrupting substances and legacy pollutants in indoor environment cannot be ignored.

Keywords: Endocrine disrupting compounds, Indoor dust, Yeast-based reporter gene assays, GC-MS analysis, PAHs, PBDEs

Biography of Yeh, Wan Chi

Wan Chi is currently a graduate student in the Department of Environmental Engineering, National Cheng Kung University, Taiwan. She is interested in indoor air quality and has much passion for its improvement. Her knowledge and skills of detecting endocrine disrupting compounds in indoor dust are trained in Dr. Pei-Hsin Chou's research group. She had also worked as a part-time research assistant in Biomedical Hydrogeology Laboratory, Department of Earth Sciences, advised by professor Jean for eight months. One of her future plans is to apply for exchange student in Japan, and she will try her best in every aspect.

Email:

Transformation of kanamycin resistance gene into *Mesembryanthemum crystallinum*

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In recently, salt damage has been caused by tsunamis or typhoons. In this study, we focused on phytoremediation using an ice plant which can expect high desalting effect. However, since the individual has low drug resistance, it is difficult to utilize it for phytoremediation. Therefore, we aimed to produce transformants suitable for desalting by introducing genes that can be resistant to an external environment to the ice plant.

In this study, a method of producing an ice plant having a kanamycin resistance gene using the Agrobacterium method was examined, with a view to establishing the technique of the transformant. So, plant transformation was carried out using phytopathogenic soil bacteria, which is Agrobacterium, which can infect wounds of plants and introduce specific gene regions in Agrobacterium into plants. As a result of introduction by electrophoresis analysis, the bp was 700-800 in Fig.1, which almost accorded with a value 795bp the kanamycin resistance gene. Therefore, it was judged that transformation of *Mesembryanthemum crystallinum* using the Agrobacterium method was possible.

In addition, adventitious buds could be induced by adding 1.0 ppm of cytokinin and 1.0 ppm of auxin to individuals which became callus by transformation (Fig. 2).

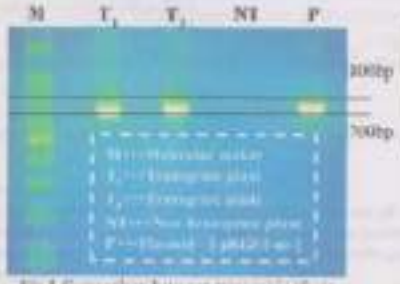

Fig.1 Comparison between transgenic plants and non-transgenic plants

Fig.2 Transformed callus and adventitious bud

Biography of a Presenter

Yuki Mochiduki is studying the transformation of salt plants aimed at phytoremediation in salt - damaging agricultural sites where positive results can be considered. In salt plants, no transformation method has yet been established. Therefore, I have learned about transformation methods and plant tissue culture that have already been done in different plant species. We have used this to establish a transformation method in salted plants. When model genes were introduced in the same way to already existing chlorophyll plants, succeeded in producing transformed plant individuals.

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Analysis of endocrine disrupting activities in Taiwanese southern estuarial sediment using bioassays

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Endocrine disrupting compounds have been found all over the environment and are known to be harmful to living organisms. In order to study the distribution of such compounds in the estuary in southern Taiwan, genetic recombinant yeasts were used to detect agonist and antagonist activities of progesterone (PR), glucocorticoid (GR), mineralocorticoid (MR) and androgenic (AR) receptors in sediment (Sed), water (W), and suspended solids (SS) samples taken from two Taiwanese rivers.

Results of bioassays showed that no significant PR/GR/AR/MR agonist and PR/GR/AR antagonist activities were found in Sed, W, and SS samples from Erren River and Yanshui River collected in June and September, 2017. On the other hand, MR antagonist activity was detected in Sed, W, and SS samples from all the target sampling sites. It might indicate that the organisms in these rivers are under threat of potential MR antagonists.

Keyword: Endocrine disrupting compounds, Estuarial sediment, Recombinant yeast bioassays

Biography of Huang, Chi Wen

Chi Wen is currently a graduate student in the Department of Environmental Engineering, National Cheng Kung University, Taiwan. With much interest in river and marine pollution situation, she joined Dr. Pei-Hsin Chou's research group when she was a college student. Her knowledge and skills of detecting endocrine disrupting compounds were trained since then. So far, her future plan is to use the skills she learned to investigate river and marine pollution problem and make efforts to its improvement.

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Vehicle transient response effects on driving behavior

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KEY WORDS: Vehicle Dynamics, Driving Stability, Driver Model, Dynamic Model(B2)

Driving behaviors were measured with driving simulator on this study. A driving behavior is coordinated with vehicle dynamic response. The study focuses on transient response of lateral acceleration. A transfer function, which transforms steering angle into lateral acceleration, can be obtained through the equation of vehicle planar motion. The transfer function has the first and second order lead time constants. Each time constant affects different range of frequency. A frequency range of steering angle would be depended on driving task. Therefore, vehicle transient response and driving task should be investigated in the same time.

Subjects were ordered a lane change task on this study. Lane change Section were 40 and 35 meters. And, the measured data was identified in the driver model. This methodology gives quantitative rating of the behaviors. The Results are on the following figure. When driving task was difficult, preview time was long. At the same time, handling gain was big. Low and high frequency range of the response properly had opposite effect on driving behaviors.

Vehicle Dynamics model for this experiment: $\mathbf{A} = -\frac{m}{2l}\frac{l_f K_f - l_r K_r}{K_f K_r}$, $\omega_0 = \frac{2l}{V}\sqrt{\frac{K_f K_r}{mI}}\sqrt{1+\mathbf{A}V^2}$, $\zeta = \frac{m(l_f^2 K_f + l_r^2 K_r) + I(K_f + K_r)}{2l\sqrt{mIK_f K_r(1+\mathbf{A}V^2)}}$

$$\frac{r(s)}{\delta(s)} = G_0^r \frac{1+T_r s}{1+\frac{2\zeta}{\omega_0}s+\frac{s^2}{\omega_0^2}},\quad G_0^r = \frac{1}{1+\mathbf{A}V^2}\frac{V}{l},\quad T_r = \frac{mVl_f}{2lK_r}$$

$$\frac{a_{lat}(s)}{\delta(s)} = \frac{VG_0^r}{1+\frac{2\zeta}{\omega_0}s+\frac{s^2}{\omega_0^2}}(1+T_{a1}s+T_{a2}s^2),\ T_{a1} = K_{Y\delta 1}\frac{l_f}{V},\ T_{a2} = K_{Y\delta 2}\frac{l_f}{2K_r}$$

Driver model: $\frac{\delta}{Y_{ref}-(1+\tau_p s)Y(t)} = \frac{K}{1+T_L s}$

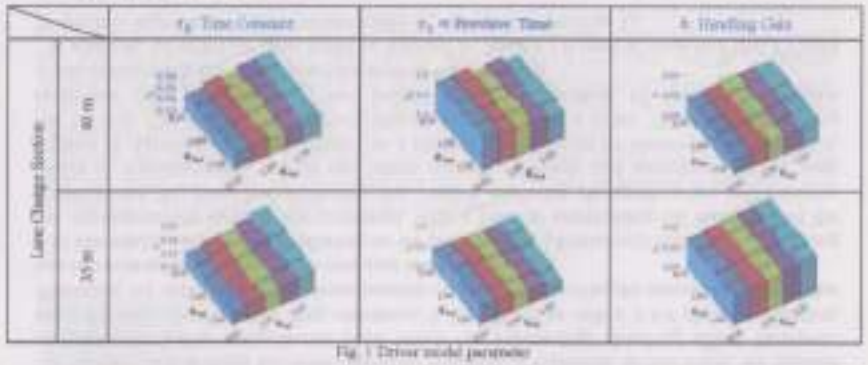

Fig. 1 Driver model parameter

r: Yaw rate

a_{lat}: Lateral acceleration on this experiment

I: Yaw moment of inertia

l: Wheel base

l_f: Distance between C.O.G and front axle

l_r: Distance between C.O.G and rear axle

K_f: Cornering power of front tire

K_r: Cornering power of rear tire

δ: Steering Angle

V: Vehicle Speed

y: Lateral Displacement

Y_{ref}: Lateral Displacement to object line

Small Fuel Cell Vehicle for Small Electric Vehicle Competition

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We are developing vehicles using natural energy, such as bio energy and hydrogen energy. A small fuel cell vehicle with a fuel cell of 100W class had been developed for small electric vehicle competition of the World ECONO Move (WEM) we participated in. Fig.1 shows a competition course of WEM. One lap is approximately 6km, and a paved, almost flat straight road continues. There are two corners: the first is with a radius of 470 m and a slope of 2% and the second is with a radius of 20 m. Two metal hydride hydrogen tanks of 60L are used.

Fig.2 shows a mechanical system of the developed vehicle. Three 20-inch tires are driven by a 200W DC motor and a reduction system with a gear box and a sprocket-chain system. The total weight is approximately 30kg. The mechanical system was designed as a decomposable system. Therefore, it is possible to transport by express home delivery. Fig.3 shows a control system in which temperature management of the hydrogen tanks, switching of the two tanks, management of electric double layer capacitors, purging of the fuel cell, control of drive motors etc. are carried out.

The experimental results are shown in Fig.4. The above two data are the temperatures of the two tanks, the third from the top is the voltage of the fuel cell, and the lower is the current of the fuel cell. The metal hydride hydrogen tank has a characteristic that the temperature decreases at the time of releasing hydrogen and it becomes difficult to release hydrogen when the tank temperature becomes too low. We are proposing a method of alternately switching between the two tanks. Experimental results revealed that the tank temperature reduction was weakened by switching the tanks.

Fig.1 Competition course

Fig.2 Developed vehicle

Fig.3 Control system

Fig.4 Experimental results

Mr. Kento IKEMOTO graduated from Kanagawa Institute of Technology, and now he is a graduate student of Dept. of Mechanical Systems Eng. He is interested in Mechanical design, Control system design, and micro computer programming etc. E-mail: s1784005@coe.kanagawa-it.ac.jp

Fault Diagnosis of c-Si Modules in a PV String

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In recent decades, it has been reported that the failure of PV modules has been increasing due to the increases in the large-scale utilization all over the world. According to the related reports, among which the hot-spot phenomenon accounts for a large proportion.

The hot-spot phenomenon typically occur in the partially shaded c-Si modules of Photovoltaic (PV) generation system, where the low-resistance defects exist. The severity of hot-spot phenomenon is identically described as destructive damage, along with accelerating the speed of degradation due to its high temperature.

Due to this feature, this paper presents a novel heat-avoided control system in order to deal with the hot-spot phenomenon. In this system, the real-time operating behavior determined with regard to the external conditions, mainly the shaded conditions, which can be monitored by examining the I-V curve periodically.

Besides, the control strategy, as the key component of this system, the principle of which is described as that the conventional P&O (perturbation and observation) method, with which transient-periodic scan processes are associated sequentially. The validity of this novel control system verified by the experiments in laboratory prototype, including the thermal verification have been implemented. Compared to the conventional system, the results show that the hot-spot phenomenon is substantially suppressed and the PV generation system can operate safely during power generation.

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His research interests include photo-voltaic generation system, and power electronic converters.

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Search for extreme environment microorganisms living in deep-sea sediments.

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[Background]

In recently, production and use of clean energy has attracted attention in society. Among them, biomass utilizing microorganisms is one of the subjects for energy. In general, generation of fuel gas using hydrogen-producing bacteria and methane-producing bacteria is known as an one of energy system for biomass.

[Experimental method]

In this study, hydrogen producing bacteria and methanogenic bacteria were researched and an attempt for clarifying a microbial community was carried out. A metagenomic analysis for deep sea sediments was done, which is an extreme environment where an evaluation of microbial communities is biologically unexplained, and discussion for hydrogen - producing bacteria and methanogenic bacteria was done.

[Results and discussion]

Metagenomic analysis was carried out using ocean sediments which including rich iron in the Okinawa Trough - Tarama Marine Hill (sampling point A, depth 1529 m) and Mariana - Snail site (sampling point B, depth 2854 m). As a result seven strains from sampling point A, and eight strains from sampling point B were detected, and *Clostridium beijerinkii*, which is a hydrogen producing bacterium, was found out at both point A and B. In addition, many of the obtained bacteria was found to be anaerobic bacteria.

Kiyonobu Shiiya entered Faculty of Engineering Kanagawa Institute of Technology. At present, we isolated isolates of hydrogen-producing bacteria that are considered to be usable for hydrogen. I mediate two-stage fermentation from microorganisms living in the seafloor sediment. In addition, we are doing physical property assessment as to whether it is a strain resistant to salt.

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Analysis of PV array with MPPT unit

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The PV generation system operates in maximum power point of PV array by MPPT control of power conditioning system (PCS). However, there is a problem that maximum power of the PV array configuration greatly decreases by partial shadow.

The authors previously proposed the system which connects MPPT unit to every PV panel between PCS and PV array. However, the effect of this system is still not clear, because operation of this system is complicated.

This paper proposes the new simulation method for P-V and I-V characteristics of string composed of both the PV panel with MPPT unit and the PV panel. Compared P-V and I-V characteristics obtained from this proposed simulation method and experiment, the effectiveness of this method is clarified. In this method, the maximum power obtained from string composed of both the PV panel with MPPT unit and the PV panel is 1.28 times, compared with maximum power of conventional string composed of PV panel.

Yusuke Takeda received B.S. degree in electrical and electronic engineering from Kanagawa Institute of Technology, in 2017. He is currently working toward dual M.S. degree in Kanagawa Institute of Technology.

His research interests include photo-voltaic generation system, and power electronic converters.

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Consideration of time based interlocking control system for motorized blinds and lighting

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It is said that the office using lighting arrangements enable to sleep well. The influence on health is described. The study of lighting sunlight. We consider the system taking light in the house positively and enabling to adjust incidence light.

We considered and developed "Interlocking control system for motorized blinds and lighting" considering the value of room illuminance and the angle of sunlight incidence. In this experiment, we used a floodlight being possible to adjust lightness by using a slidax instead of natural light. We used "Node-RED" which is the IBM's visualtool to make this system program.

We developed the version"1". In the version"1", the program controls the degree of blind's slats and turning on or off a light based on the value of room illuminance from a light sensor. In November 2017, we let 119 subjects fill out questionnaires after seeing the working of the version"1".

We developed the version"2" including 2-type modes. The object "Study mode" is bringing light in the room and being bright on the desk to read letters and figures in studying at the desk. The object "TV mode" is taking natural light with preventing the reflection glare.

We found 3 results by considering version"1" and version"2".
1) We made the time based interlocking control system for motorized blinds and lighting by using "Node-RED".
2) 79% subjects answered they want to use this system.
3) In version"2", we determined time based the degree of blind's slats for the sun altitude and realized the automatic control. In the future, we need to install the motorized blinds on the home window and do experiment in the environment using sunlight because of enhancing practicality.

Biography (150 words limit) of a Presenter

I graduated from Kanagawa Institute of Technology, Faculty of Engineering, Department of Electrical and Electronic Engineering in 2016. I enter Kanagawa Institute of Technology Graduate School of Engineering, Course of Electrical and Electronic Engineering in 2016.

Synthesis of photoresponsive polymer material with dynamic cross linker

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[Background and Object]

Recently, a stimulation responsive gel which molecular structure and properties changes under an external environment such as pH, temperature, an electric field and light have reported. We paid attention to light which on-off control would be possible as one of the external environment easily.

The purpose of this study is to synthesize new materials which molecular structure and a physical property changes by light stimulation.

[Experiment]

A polyrotaxane gel that produces quickly swelling and shrinkage with dynamic cross-linked points in molecular structure was developed. 4-Acryloyloxyazobenzene having photoisomeric reaction was synthesized, and photoresponsive polyrotaxane gel was synthesized by introducing the obtained molecule into molecular chain of cross-linked part of polyrotaxane. And Polyrotaxane gel without photoresponsive molecule was synthesized. For the both gels, behavior for swelling by UV (365 nm) irradiation and shrinkage by visible light (460 nm) irradiation were measured.

[Results and Discussion]

Fig. 1 shows the time course of shrinkage ratio in photoresponsive polyrotaxane gel and polyrotaxane gel without photoresponsive molecule. Under irradiation of the visible light, the shrinkage did not occur about the gel without the photoresponsive molecule. On the other hand, on the photoresponsive polyrotaxane gel the shrinkage continued during 120 minutes under irradiation visible light(460 nm). After 120 minutes, the shrinkage ratio of the photoresponsive polyrotaxane gel was 17%. In the future, we will examine the influence on the swelling and the shrinkage due to molecular chain length in the network structure of the gel.

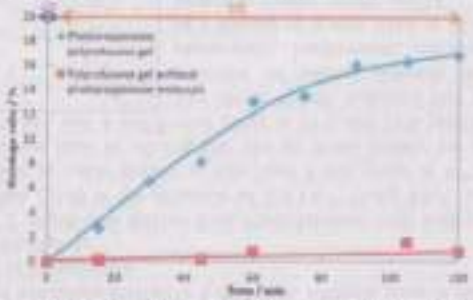

Fig. 1 Ratio of shrinkage of polyrotaxane gel against time

Motoko Kudo graduated in Faculty of Engineering from Kanagawa Institute of Technology, Kanagawa Japan, in March, 2017. She is in the 2nd year of master's course in Department of Applied Chemistry and Bioscience. She researches about synthesis and evaluation of photoresponsive polymer material with dynamic cross linker.

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Study of the Method for Improving Traffic Flow with Safety Driving in the Mixed Environment of Autonomous Vehicle and Human-Operated Vehicle.

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Intelligent transport systems (ITS) are widely researched and developed for reducing traffic jams, traffic accidents, etc. For example, Japanese government intends to, by 2020, reduce the number of people killed in traffic accidents to less than 2,500 using autonomous vehicle (AV) technologies. However, it is difficult to replace all human-operated vehicles (HOVs) to AVs because of their lifecycle. Therefore, we can easily predict the mixed environment of AVs and HOVs. However, mixed environment may reduce the effect of AVs. AV can get the information of other vehicles by vehicle-to-vehicle (V2V) or vehicle-to-roadside (V2R) communication functions that are called cooperative ITS (C-ITS). However, as AVs that collect diverse information through their own sensors may not sense the blind spots, it may result in traffic accidents. Moreover, only those vehicles that can collect extensive information from V2X communication functions and be operated by human are shipped.

AV is defined by the National Highway Traffic Safety Administration (NHTSA). In mixed environments, vehicles with no communication functions or whose driver does not accept the systems' opinions may not receive the expected effects of AVs. Moreover, a driver located at a level higher than level 4 constitute the system that may offer a different impression to human drivers, because of the difference between the system and the human as drivers. In the worst case scenario, it may negatively affect the traffic flow.

Adaptive Cruise Control (ACC) is a function that maintains the vehicle's distance with regard to the front or back vehicle using distance sensing technologies. Cooperative Adaptive Cruise Control (CACC) is an extended form of ACC that uses communication with the front vehicles. However, HOV can delay the operation to keep distance as the driver keeps distance by relative velocity. It is thus difficult to find the change of velocity for humans.

In this paper, we focused on these different factors between AV and HOV that are communication functions and method for maintaining distance. Then, we defined three types of vehicles: AV, semi-AV, and HOV. We further defined the mixed environments considering the various ratios of road occupation. Then, we simulated these environments using multi-agent traffic simulator to clearly determine the problems. Finally, we proposed a solution for these problems.

Hiroto Furukawa stepped a grade in Kanagawa Institute of Technology in 2017. He is information technology major at graduate school of Kanagawa Institute of Technology.

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Elongation of hydantoins bearing glutarimide or succinimide

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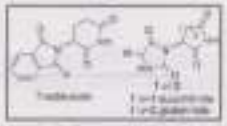
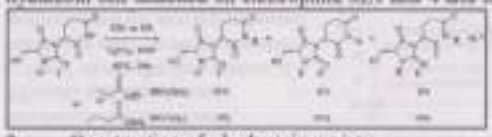


We have been working on development of easily preparative of multi-substituted optically active hydantoins from amino acid amide and synthesis of new hydantoin derivatives. In contrast, thalidomide (TDM) has been capacity to the pharmacological effects include anti-tumor-promoting activities such as suppression of cell differentiation and angiogenesis. Since hydantoin derivatives **1**, **2** have a structural resemblance to TDM, they have the capacity to exceed the bioactivity of TDM.[1] Furthermore, they have shown effects on inhibitor of sodium channel and inhibitor of β-secretase.[2] However, there is not enough above bioactivities and their improvement is necessary. In the presentation, we will try elongation of hydantoin derivative **1** or **2** from nitrogen atom at the imide or hydantoin to improve effects of bioactivities.

1. Treatment of hydantoin with electrophile

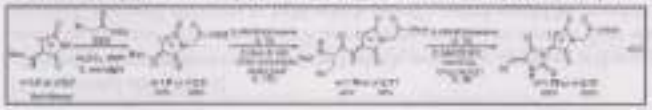
The first examination is treatment of **2**, which was derived from Phenylalanine, with α-ethyl bromoacetate (EBA) or methyl acrylate (MA) in the presence of K_2CO_3.[3] Using EBA, as electrophile elongation of **2** occurred at an imide moiety in only, and **3** was given in 43% yield. On the other hand, when MA was used as electrophile, not an imide moiety but a hydantoin one attacked on electrophile MA and **4** and **5** were given in 35% and 14% yields.



The above results indicated that a structure of adduct depends on electrophile. Furthermore, reaction of **1** instead of **2** with EBA or MA caused in similar results. (eq.1)

2. Construction of a hydantoin moiety

Since yields and selectivities in elongation of **1** or **2** were not enough, another method for a preparatives of **3** was examined. The second examination was elongation of 3-4-butoxycarbonyl (Boc) amino succinimide **6** or glutarimide **7** at imide moiety. Succinimide **6** or glutarimide **7** was treated with α-benzyl bromoacetate (BBA) or benzyl acrylate (BA) in the presence of K_2CO_3 and the reaction proceeded to give the corresponding compound **8** or **9** in high yield. (eq.2) After removal of a Boc group, condensation of N-Boc-Phenylalanine resulted in giving **10** or **11**. In the final step, cleavage of a Boc group and then construction of a hydantoin ring utilizing 4-nitrophenyl chloroformate (NpOCOCl) gave the target compound **12** or **13**. From ^{1}H NMR spectra of **12** or **13**, unfortunately both compounds (**12** and **13**) were occurred on little racemization in the construction of hydantoin ring.



Mr. Ryuku Namiki was received a bachelor's degree in Engineering from Kanagawa Institute of Technology, Kanagawa, Japan in 2017. He is in the 2nd year of master's course in an applied chemistry division. He researches about synthesis of multi-substituted optically active hydantoins.
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A Study on Risk Predictive Technologies Considering a Road Surface Friction μ in Unsignalized Intersection

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1. Introduction

The number of Japanese traffic accident deaths in fiscal 2016 has been reduced to the level that cuts 3904 people and 4000 people by the trinity efforts of the industry and the public.
In recent years, it has been reported that an accident avoidance system in case of emergency, such as AEB (Automated Emergency Brake system) which recognizes obstacles using cameras and radars, etc. contributed to reduction of accidents, and the safety technology of automobiles also improved. However, problems such as the fact that the accident at the no-signal intersection is insufficient and the number of accidents at the time of rain is about 4 times greater than at sunset , such as AEB etc, still have problems that can not be expected. Development of safety technology is an urgent task. Therefore, in this research, we focus on the crowded accident at the no-signal intersection which is difficult to deal with currently dealing with AEB etc., and propose accident avoidance system considering risk prediction technology and road surface μ.

2. Simulation Model Principle at No Signal Intersection

The existing AEB was a no-signal intersection, and there were the following problems.

① There is no time to stop for pedestrians and bicycles that pop out from the blind spots of buildings and houses.

② In rainy weather, the road surface μ is low and slippery, so the stopping distance increases.

In this research, we modeled "possibly deceleration control + AEB" according to the road surface μ, and examined reduction of the accident accident by simulation. Here, the control to decelerate in advance from before the no-signal intersection is called "deceleration control that may be done". Figure 1 shows the deceleration control model which may be at the no-signal intersection.

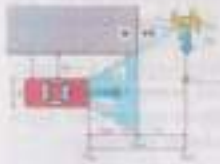

Fig. 1

Biography of a Presenter

Tatsuya Shimasaki belongs to Kanagawa Institute of Technology. We are studying automobile risk prediction technology mainly at no signal intersection. Email: s1884008@ice.kanagawa-it.ac.jp

The study of evaluation methodology about risk prediction algorithm using traffic space modeling

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In recent years, ADAS/AV (Advanced Driver Assistance Systems / Autonomous Vehicle) has become a hot topic. With the deepening of the research on ADAS/AV, there is an increasing demand for verifying hardware architecture and algorithms of vehicle control systems. The existing verification methods include real vehicle test and virtual simulation by software. In this study, a virtual simulation methodology of using traffic space modeling to evaluate and verify potential risk algorithms based on the near-miss accident big data is proposed. The purpose of this study is to improve the efficiency of algorithm validation and improve the accuracy and reliability of simulation results. A simulation platform is provided in order to promote the development of ADAS/AV.

In the automobile industry, the actual vehicle verification quality has become an indispensable technical method, but in order to speed up the project development, the V-model design method is proposed. Through the means of HIL(Hardware-in-the-loop) and SIL(software-in-the-loop), the performance of the product can be tested in the design period. In the past, the research on simulation and analysis tested the performance and reliability of control algorithm in a single emergency scene. In this study, a SIL simulation environment is built with a traffic space modeling. Such vehicles are simulated in the complex and heavy traffic flow of the reproduced algorithm, and the algorithm is verified.

The study focuses on establishing a control algorithm for the typical driver's pre-deceleration to deal with the dangerous scenes that pedestrians suddenly dart out from intersection without signal or front of parked cars. Based on the data resources of the near-miss database, the cause and effect of the accident are statistically analyzed, and a driving control algorithm to deal with the dangerous situation is established. At the same time, the database resources are analyzed, the typical scene parameters are deduced, and the template of the traffic space modeling is established. The model is embedded in many places of the traffic flow to achieve the purpose of multi-point verification in the traffic environment. The onboard ADAS/AV algorithm parameters are set up and adjusted, the performance reliability of the algorithm and its impact on the traffic environment are analyzed in complex and heavy traffic flow. The data from these aspects were used to evaluate the ADAS/AV algorithm objectively.

Biography of a Presenter

Haipeng Zhang is specializing in vehicle system engineering at Kanagawa Institute of Technology, Japan. With his expertise in vehicle control and the traffic engineering in improving the ADAS algorithm and reducing the emergency level of vehicles. He has the experiences of formula student competition, took part in the Chinese, Germany and Japanese competitions for many times.

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Converter and Communication for LVDC microgrids

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In order to realize the interconnection interconnection between DC microgrids and the access of energy storage in microgrid efficiently, a flexible DC power distribution converter with communication capability and its based energy management schemes are investigated.

The characteristic of the flexible DC power distribution converter is that the energy is efficiently transferred between the DC bus by controlling the magnitude and direction of the series-connected converter's current. The feasibility of this model is analyzed in the research. The flexible DC converter consists of a bidirectional active full bridge converter (DAB) and a four-quadrant DC-DC converter. The DAB provides an independent and isolated DC power to the four-quadrant DC-DC converter which is the down-stream stage. The function of the flexible DC power distribution converter is achieved by controlling the current of the converter. The circuit model was built in MATLAB and realized the control of the voltage and current. Finally, the experimental platform was built to verify the power transfer between the DC Bus.

At the same time, for the management of distributed energy in DC micro-grid, a method of coordinating distributed energy operation by means of distributed management is proposed by using DC bus as communication medium and pulse voltage as communication method. In the system, the main module controls the bus voltage and the slave module controlling the coordinate of the insufficient and excessive energy on the DC bus. The communication between the master and slave modules is realized by pulsed voltages of different pulse widths and combined with the proposed drooping method for multi-module power distribution. The feasibility of this method is verified by experiments.

Biography

Huang Ming is a graduate student at Yangzhou University and his major is power engineering. The main research he study is power electronics. In the first year of graduate study, he developed a low-voltage molded case circuit breaker under the guidance of professor Jiang. The flexible DC converter was studied at the second year of graduate students. And Experiments were carried out after verification of theoretical analysis and simulation. Finally verify the feasibility of the design scheme through experiments.

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A low cost hardware-in-the-loop simulator for power electronic circuits

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In the engineering field, due to the limited hardware resources such as high-power electromechanical devices and high-power power supply systems, Hardware-In-the-Loop simulator (HIL) can develop prototyping circuits and motor drive system rapidly without physical objects hence save development costs. HIL technology can improve the efficiency of the practical courses of power transformation in colleges and universities and provide a safe and equivalent development environment for the experimenter.

This paper proposed a HIL platform for digital power supply development. The platform consists of a dual-core digital signal controllers (DDSCs), which perform digital control and digital simulation respectively by using different digital signal controllers. The transfer function method is applied in the digital simulator DSC to generate the output variables given the input variables.

In the digital controller DSC, the interrupt session is open to the developer for control code implementation. The inter-processor communication (IPC) is used to pass variables between the digital controller core and digital simulator core. The system output is send to the DA port of the digital simulator core, which can be measured by the oscilloscope in a visible way. In the prototype, both ideal and parasitic parameter enabled converter model are implemented. The test results indicate that the digital simulator can well emulate the average small signal model of a power converter in open-loop and close-loop scenario. The rendered system is of low cost, which can be easily applied to the teaching and fast prototype development phase of product design.

Biography

Huang Bing is a graduate student at Yangzhou University and his major is electrical engineering. The main research his study is motor application. In the first year of graduate study, he developed a sensorless reluctance motor drive and control system under the guidance of professor Jiang.

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Evaluation of Hyaluronan Production by HAS2 Inducing Compounds from *Atractylodes lancea* and the Construction of HAS2-GFP Vector

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[2] Kobayashi Pharmaceutical Co. Ltd, Japan

Hyaluronan (HA) is a linear polymer that repeats alternately the disaccharide structure of alternating D-glucuronic acid and *N*-acetyl glucosamine. HA is widely present in the connective tissue of the skin and plays important roles such as creating freshness, tension, and elasticity of the skin. However, HA can be supplied only by surgical technique. Our major approach in this study is to increase HA from the inside of the cell for anti-aging. HA is produced only by Hyaluronan Synthase (HAS). In the previous study, we screened the inducer for HAS with the use of Normal Human Dermal Fibroblasts (NHDF) from the herbal medicines. In the result, we found that the extract of *Atractylodes lancea* has a high activity of HAS2 expression promoting. From *Atractylodes lancea*, we isolated two active compounds which increase the HAS2 mRNA expression level. Those active compounds were identified hinesol and β-eudesmol by GC-MS and NMR. In this study, we revealed that correction between HAS2 expression level and HA production. We evaluated the effect of HAS2 expression level induced by two active compounds. In the HAS2 mRNA expression in NHDF treated with hinesol or β-eudesmol are 1.8 and 4 folds, respectively. However, the mechanism of the induction of HAS2 and physiological function of these chemicals has not been elucidated. Therefore, in this study, to perform the basic investigation of the mechanism, HAS2 cDNA was synthesized from total RNA, and a vector for expressing the HAS2-GFP fusion protein was constructed.

Tam T. Nguyen graduated in the major of Biotechnology in Can Tho university, Vietnam in 2013. With the experience in Japanese culture in the period of 2014 – 2016, he started to study Japanese language at Yokohama Language Academy, Kanagawa, Japan. From 2016, he became research student in the field of Molecular Biology in Kanagawa Institute of Technology. In the year of 2017, he decided to continue the graduation academic in Kanagawa Institute of Technology.

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Modification of porous membrane using phospholipid polymer brushes

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Protein adsorption occurs on surface of membranes which causes deterioration of membranes performance. In this study, a surface grafting of anti-fouling poly (2-methacryloyloxyethyl phosphorylcholine) (PMPC) on porous membranes were prepared by combining self-assembly and surface-initiated atom transfer radical polymerization(SI-ATRP).

In previous reports, various polymer graft surface designs have been widely used to improve nonspecific protein adsorption of materials surface, and it is important to understand how the polymer brushes structures in various graft density and chain length on surface of membranes affect anti-biofouling property, permeability and performance of rejection(Fig. 1).

SI-ATRP is a useful method for growing polymer brushes from surface with high graft density(number of chains per unit area) and well-controlled chain length. To investigate the structures of brushes in membranes, fourier transform infrared (FT-IR), scanning probe microscope (SPM) and ellipsometer were used to characterize the surface of modified membranes(Fig. 2) and surface of silicon wafer. The well-controlled PMPC brushes in various graft density and chain length were grafting from surface of membrane to tested anti-biofouling, permeability and rejection performance with filtration experiment.

Fig. 1 The simple image of modified porous membrane and the effect.

Fig. 2 SPM height image of modified porous membrane.

Jingwen Chen was born in 1990. He received his bachelor of engineering degree at Kanagawa Institute of Technology in Japan in March 2017. Since April 2017, he has been performing his Master's degree in Applied Chemistry - Bioscience course in Kanagawa Institute of Technology. His main research interest are membrane separation and surface modification by surface-initiated atom transfer radical polymerization(SI-ATRP).

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Differential substrate specificity of the Homologous Co-Chaperonins GroES and gp31 in the chaperonin-dependent protein folding

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Chaperonins are universally conserved proteins that facilitate the folding of wide spectrum of proteins. The best characterized of chaperonins is the *Escherichia coli* chaperonin GroEL and its partner, GroES. The GroEL/GroES chaperonin complex is required for the folding of 30% intracellular proteins. GroEL is composed of 57 kDa subunits, arranged in two heptameric rings stacked back to back. GroES is a dome-shaped heptameric ring of 10 kDa subunits that bind to the GroEL ring in the presence of nucleotides. In the reaction of GroEL, first, substrates binds to the GroEL with the H, I helices of the apical domain, and then the GroES mobile loop binds to the same site, after that the substrate is dropped in the GroEL cavity and these were folded. Since GroEL binds directly to the substrate, substrate specificity is thought to be in GroEL. But factors determining whether the substrate requires GroEL/GroES for its folding have not been elucidated. While bacteriophages like λ and T4 utilize their host's chaperonins for the folding of their own proteins. The morphogenesis of bacteriophage T4 requires a specialized bacteriophage-encoded molecular cochaperonin (Gp31) that is essential for folding of the T4 major capsid protein (Gp23) . Gp23 are folded by GroEL/Gp31 complex but not folded by GroEL/GroES complex. This result suggests that GroES contributes to substrate specificity, since a unique GroES-like protein is required for the folding of one protein. Even though the overall amino acid sequence homology between GroES and Gp31 is only 14% identical, the amino acid sequences of their "mobile loop" are similar. Here, we aimed to purify each chaperonin complex from *E. coli* and T4 phage infected *E. coli* to identified *in vivo* substrate proteins within the GroEL complex cavity through the proteome analysis. Furthermore, we constructed a chimeric mutant in which the mobile loop of GroES and the phage GroES-like protein was exchanged, and clarified the contribution of the mobile loop to the chaperonin-dependent protein folding.

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Course Scheduling with Genetic Algorithm

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It is typical that many education institutes have problem concerning with scheduling. Because of many constraints, for example lecturer's available time, limited resources of classroom and number of classes, makes scheduling hard to manage. Our goal is to find the best schedule which has the least conflict with all limitations and constraints.

This problem can be solved by conventional method which uses a human to manually manage schedules. However, this conventional method is time consuming and has lot of work load. Search technique such as Genetic Algorithm is more appropriate to solve the problem, because it can generate a large number of solutions, compare the cost between each solution and pick the best one with the lowest cost which is really hard to do using human method.

This work presents our approach in solving the course scheduling problem with genetic algorithm. Related works are introduced and the problem is formulated formally. Experimental results are obtained using tools available in Matlab, and are evaluated based on the fitness function.

Biography

I am currently a PhD student at university of Victoria, Canada. I have more than 10 years of experience in telecommunication business. My working background involved in GSM network implementation for several countries in southeast-Asia. My field of research are telecommunication security and computer forensics.

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Development of English Listening System for Learning Different Pronunciations in Various Countries

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With the rapid progress of globalization, the importance of communication using English are increasing in various countries including the Asian nations. As many researches point out, we find different characteristics of pronunciations and accents in English spoken in each country and area. In this study, we assume that one of the reasons is that they are mainly influenced by mother tongue, and define such English spoken in each country as "local pronunciation English" in distinction from local dialects.

Meanwhile, for learners of English listening, including many of Japanese, it would be effective to improve the ability of English listening according to the current listening skill, and it is important to consider "easiness of listening" to English for providing such an English learning environment to each learner. Here, we thought that if "easiness of listening" to English for an individual person is related to phonological and phonetic characteristics of English, it would be possible to categorize phonological and phonetic characteristics by country and area, however it still would be difficult to extract "easiness of listening" to English, since it depends of the listening ability of each learner.

In this study, we propose an e-Learning system for learning different pronunciations of English spoken in various countries. The feature of proposed system is to provide a function of extracting countries and areas where English speech is relatively easy for a learner to listen based on the analysis result of listening learning history of pronunciations and accents of English spoken in various countries and areas. In the process of analysis, we will focus on the rates of correct answers by each learner for questions of English listening, where English speeches in each question are classified into countries of speakers in advance. In addition, we introduced the concept of metaphorical "coin" to assess learning activity of learners as much as possible, such as learning time and achievement, for allowing learners to intuitively check their status of English listening learning in our prototype. We report the case studies that we used our system in a small English lesson as well as the result of system evaluation based on a few experiments using our prototype.

Biography

Kohei Kamimura graduated from Kanagawa Institute of Technology in 2018. Presently, he is a first-year student of Course of Information and Computer Sciences, Graduate School of Engineering, Kanagawa Institute of Technology. He is interested in a study about an e-Learning system for supporting English learning, where the phonological and phonetic characteristics of English spoken in various countries and areas are focused on. Especially, he is researching a method for calculating "easiness of listening" for each learner based on the learner's speech latest.

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Cross-Cultural Analysis of Food Images in Advertising between Thailand and Japan

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With the globalization and diversification of food culture in many countries, food advertisement has become an integral part in our decision-making about food, where we are influenced especially by the colors and beautification in inducing desires amongst consumers. However, there is a possibility that people in different countries also have different preferences on food images.

In this study, we make a survey of satisfaction of food images for people in Japan and Thailand on the cross-cultural analysis of impressions and feelings of individual people in different countries in order to analyze preferences on food images beautification. In this experiment we adjust color properties such as color balance, brightness, saturation, and contrast of food images according to impressions and feelings of individual people in different cultures and societies.

We created the survey to ask people from both Japan and Thailand on their preferences on food image. We started with taking picture of a hamburger in the studio with zero exposure after that we adjusted contrast brightness and saturation separately. This survey has 142 participants in total with 64 Japanese people and 78 Thai people.

Biography

Tippayalak Sriknew is graduated from faculty of Science majoring in Imaging and Printing Technology from Chulalongkorn University. She is interested in Cross culture analysis, image processing and photography.

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