

CHAPTER I INTRODUCTORY

1.1 Background

In this current day and age with the advent of Big Data, and increasing Internet usage; unprecedented volume of new data is being generated globally in an alarming speed. It is said in an article by Idrees, Alam, & Agarwal, (2018) that the estimated size of data generated every day is 2.5 quintillion (25×10^{17}) bytes; this number will keep on growing; especially for developing nations in South East Asia according to research by Poushter, (2016). Numerous organizations, and companies employ information technology to handle Big Data (Hashem et al., 2015), but there are still countless others that struggle to keep up; and still work with traditional methods to manage data. These traditional methods involve repetitive tasks done by humans manually; other than being prone to human errors, there are various other disadvantages to having a human doing the work: it's costly, and not always available due to human limitations. Replacing human workers with AI driven bots using Robotic Process Automation technology (RPA) would free up the human workers to do jobs that only humans can do; and thus according to Autor (2015) will increase the quality of jobs available in the market. There's also a surge of demand in using RPA tools among companies (van der Aalst, Bichler, & Heinzl, 2018).

According to Lacity, Willcocks, & Craig, (2015) the term RPA means the “automation of service tasks that were previously performed by humans”. These tasks can vary from the simple movement of data; to more advance tasks like extracting data, and replying to E-mails. Traditionally, companies would hire software developers to develop APIs (Application Programming Interfaces) or write computer scripts that are then integrated to existing computer systems to be automated. In contrast, RPA systems provide a graphical user interface, and recording capabilities so that users can simply automate any given task; lowering the barrier needed to automate an existing workflow, which is why there is a surge of demand for RPA solutions (van der Aalst et al., 2018). RPA systems are generally used to replace jobs that do tasks that are repetitive in nature, however there are only a select few RPA solutions available in the market that readily provide face recognition capabilities.

A face recognition system is used to recognize, and catalog the faces of different people storing them into a system to be kept; and then used in the future as reference. Face recognition systems are commonly used as a feature in social media platforms, and also for verification purposes in other platforms. With the help of machine learning algorithms, the huge amount of data sets available, and emerging new technologies serving as input; face recognition algorithms has never been more accurate in detecting; and recognizing faces (Vinay et al., 2015).

Gleematic is an RPA solution by GleeTrees Pte. Ltd. that shows potential when compared to its competitors. With machine learning capabilities already built-in, and other various functions readily available; there’s one functionality that is still not a part of Gleematic’s arsenal; and that is a fully functioning face

recognition system. Adding a fast, and accurate face recognition system into Gleematic would add to its selling points; and thus further expands the list of things that Gleematic can accomplish.

1.2 Project Scope

This internship will be limited to the following scope:

1. The face recognition system would be added in as a fully-fledged selectable feature for an RPA solution named Gleematic which is a product, and also property of GleeTrees Pte. Ltd. and as such would be built in Python 2.7 using Odoo for the backend.
2. The face recognition algorithm will not be built from scratch, but instead rely on an open source python library called face_recognition.
3. The face recognition system would depend on cameras connected to the computer, or laptop.
4. The face recognition system would be split into two parts: a client side that acts as the platform to receive inputs and display outputs, and a server side that serves to store data received from the client; and process it before sending it back to the client. Both would be integrated into already existing systems in Gleematic; explanations regarding the existing systems will be kept to a minimal.

1.3 Project Objectives

1. To further expand the capabilities of the existing RPA solution by adding in face recognition capabilities.
2. To serve as an opportunity for us to implement the lessons learned from Universitas Internasional Batam into real life cases.
3. To fulfill one of the requirements needed to successfully graduate from Universitas Internasional Batam.
4. To serve as an opportunity for us to gain work experience in the field of IT.

1.4 Project Output

A fully functioning face recognition system that will be fully implemented, and integrated into Gleematic.

1.5 Project Benefits

Adding a fully functioning face recognition to Gleematic would be beneficial for GleeTrees Pte. Ltd. as it becomes one of Gleematic's selling points when compared to other RPA solutions available in the market. Having a face recognition system would also mean that users of Gleematic would be able to automate tasks that involve face recognition, further increasing the list of things that RPA can accomplish.

Since the project would be done using a combination of tools, and methods rarely tried before; it will contribute to knowledge regarding client-server face recognition systems. For us, this project would provide us with the opportunity to try out methods, and theories learned from Universitas Internasional Batam, and also to gain work experience in the field of IT.

1.6 Systematic Discussion

To provide a general description regarding the contents, and structure of this report, The writer composed the following systematic discussion below:

CHAPTER I: INTRODUCTORY

In this chapter, we will be discussing the background of RPA, and face recognition technology; before stating the objectives and benefits for this Internship.

CHAPTER II: LITERATURE REVIEW

In this chapter, we will be looking at various face recognition algorithms, and also the theories that go behind them, and also the method that will be used in connecting between the client, and server.

CHAPTER III: CORPORATE IDENTITY

In this chapter, we will describe the company, what it does, its history, and also the type of services that they provide.

CHAPTER IV: RESEARCH METHODS

In this chapter, we will discuss the thought process in designing the face recognition system, and also the methods that will be used in implementing the system into Gleematic.

CHAPTER V: SYSTEM DESIGN

In this chapter, we will be explaining in detail the design process, and also the design choices made by us; as well as a close look at the data.

CHAPTER VI: SYSTEM IMPLEMENTATION

In this chapter, we will move on to discussing the implementation of the face recognition system, and also the implementation methods used. In this chapter we will also be comparing between the system as a whole before and after the implementation of the face recognition system in Gleematic.

CHAPTER VII: CONCLUSION

Finally, in this chapter; we will reach a conclusion gathered from the internship, and also suggestions about future avenue of research that can be pursued.

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