SIEMENS INTERNSHIP

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Aakash Kalantre

University of Manchester

[kalaaki@gmail.com](mailto:kalaaki@gmail.com)

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INTRODUCTION

As I started on my first day at Siemens in Kuwait on 2nd of July 2019, I had to expect something huge as this was an opportunity that is very rare to get. Knowing the level the company is at, the pressure to deliver, even as a simple intern for 3 weeks, was huge.

I was first introduced to automation and how Siemens runs its projects and products and how departments are split and run with their tasks explained by Mr. Ahmed El-Eshawesh.

Later I was introduced to Dr. Haidar Al-Mohri who was experienced in Data Science and its application in industry. I had the honor and pleasure to work with a great teacher and moreover, an amazing person.

I would like to sincerely thank Mr. Srinivas Vasudevan for this opportunity at Siemens. I would also like to sincerely thank my mentors through the weeks, Mr. Ahmed and Dr. Haidar, who were extremely understanding and knowledgeable in their fields and assisted me with the project at hand.

A couple of days into the internship, I was given the task to find a project and implement it using a Siemens device like the SIMATIC IOT2000. It was a challenge to understand the working of the OS and the hardware associated to it. It was interesting once I got a hold of the Siemens Support Forum with experts and their software and hardware experts.

After digging deep, I came up with the idea of using the IOT2000 device as a system access device which would grant access based on who is given access initially and who are not using a face recognition concept.

This would need work of an online platform like Microsoft or Google or TensorFlow. And to implement such a system in the device was a challenge and to integrate the camera with the device and using a GUI will be one in the future.

Basic Concepts learnt

Over the course of the internship, I spent time with Dr. Haidar learning the basics of AI and ML with the implementation of a self-learning algorithm which minimized a cost function based on the actual value and calculated value from probability theory. Learning the basics of neural networks and types of NNs based on the use was crucial and useful.

Knowing how REST APIs work and how python3 runs is crucial in understanding how the code runs and why it does so. The use of Linux systems and basic commands to run python scripts and how to access a file directory system through a command line interface is crucial. Use of GitHub is an additional value that can be learnt easily and is vital for further development.

Learning theory and its practical applications is crucial, especially for how systems work and topics like ML and AI. Data science is an upcoming field and I highly recommend it if you want to get behind the brain of a computer using logic and mathematics.

Project Details

This project used a computer with several software like PuTTY, Atom, Git Bash, Firefox, Adobe Scanner and PDF reader, Microsoft Word and VSCode. It also used a Raspberry Pi 3 Model B for training and testing as the complexity of use of IOT2000 increased as we went on. Also, a SIMATIC IOT2000 box with power connection.

I used an external internet source rather than the Siemens intranet or internet. Need of several ethernet cables and HDMI cables is there. An external keyboard and muse are useful for the Raspberry Pi.

I have documented the code on GitHub extensively on the file named voiceless\_ui.py in the Cognitive\_Face folder. Please do go through it to understand the code.

The link to my GitHub is <https://github.com/kalaakash/Face_Recognition_Siemens.git>

It uses Microsoft’s API and my code explains the calls to the REST software.

There are future implementations which can be made if there is an internet connection to the IOT2000 device. It is vital to connect to Microsoft thoroughly. Use of vi might be needed if there is a CLI editor needed other than nano.

The online recognition model used is recognition\_01 by default. My API key is in the file key\_data.txt, which is read and asserted in the UI python scripts.

Look into Microsoft’s documentation of the API used.

Conclusion

I enjoyed working at Siemens Kuwait as it had a balance of work and meeting people and socializing. The learning sessions with Dr. Haidar and Mr. Ahmed were crucial and extremely useful to me. It was a pleasure working here. As long as you have a motivation or aspiration, you can do and become anything you want. Best of luck.

Contact me though Facessbook, Messenger, Snapchat, Instagram or email, if needed.