Scott Kikumu.

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Personal Profile.

I am a final year international student completing my BSc (Hons) in computer science at the University of Hull. Throughout my academic year, I have developed a massive interest in the field of Machine learning. You can see this in some of my extra-curricular projects on my GitHub. I have developed teamwork, communication and planning skills throughout my academic experiences which I am ready to prove in my career as a professional. Furthermore, I am interested in developing my skills to engineer solutions that will make a positive impact. I applied to this role as I believe it will allow me to fulfil these interests. Some of my hobbies include gym, playing PC games, chess and programming robots with a Raspberry Pi 3 Model b.

Education.

BSc computer science - University of Hull – Hull, United Kingdom (2016 to Present).

Foundation year result: (2:1)
First year result: (2:1)
Second year result: (2:1)
Final year expected result: (2:1)

Relevant modules	Results
Dissertation: Using depth search to make a Path finding robot	First (1:1)(Expected)
Data mining	First (1:1)
Embedded systems	Two One (2:1)
Distributed systems	Two One (2:1)
Computational science	First (1:1)

Sixth form equivalent - The Aga Khan High School – Mombasa, Kenya (2011 to 2015).

Subjects	Obtained Results
Computer studies	B
Physics	B-
Biology	B
Chemistry	B
English	B

Relevant Skills.

SQL, Python, C#,C++,Assembly Language.

Projects portfolio.

Creation of a remote-controlled Sports timer using an Arduino: 21ST January 2019 to 20TH April 2019.
Using C language and Arduino's IDE, the goal of the project was to implement a remote-controlled sports timer with RFID capability which tracked runners at different checkpoints. Provided that, the runners checked in to the system using assigned contactless cards. This project was successfully implemented and the source code can be found on the linked GitHub page.

Creation of a Sports Management System software: 21ST March 2019 to 19TH June 2019.
Using SQL databases to store data retrieved from the software and implementation/design of the software created using C# and windows forms, I successfully created a Sports management system. The features of the software are to keep track of elements of managing and organizing staff, manage appointments booked by customers and reporting faulty equipment.

Creation of a climate control system using PICF877A: 28TH Nov 2019 to Dec 13th,2019.
Coded using a combination of C and Assembly language, a greenhouse climate control system was created. Several unit tests were made to ensure the device is performing as intended. Through this I learnt that embedded system devices revolve around logic, persistence of code and efficiency. It requires constant testing and full – proofing to ensure the logic flows and system works and flow together as intended.

Building a neural network: 23rd Sept 2019 to Oct 10th,2019.
I built a neural network using the C++ code base to better understand the inner workings of a neural network. During this process, I discovered methodologies which made my neural network more robust and memory efficient.

Determining patient risk via AI and datamining: 7thNov2019 to Jan 17th, 2020.
I used different AI models such as Decision trees and K-Means to train it on patient data in Python to classify a patient's health risk. I then conducted a critical evaluation to choose which model was most suitable and performed best in risk classification.

Creating a path-finding robot: 7thJan 2020 to April 27th, 2020.
Using elements of machine vision and maze solving algorithms, I successfully assembled and created a path finding robot using a raspberry Pi and a parallax activity board as hardware modules. The robot was able to successfully navigate all regions of a maze(the maze being tape aligned on the floor), to reach the exit point of the maze.

Model free reinforcement learning: 4thApril 2020 to 10thApril ,2020.
Due to my interest in model free learning and Markov Decision making, I studied, created and successfully trained a model free reinforcement learning model to play a game in one of OpenAI's gym environments. However, I noticed a downside to the model as it was unable to cater for different types of data. I then found and implemented a better alternative as seen below.

Combining Model free reinforcement learning with Deep Learning: 10thApril 2020 to 21stApril 2020.
After much research I came across the process of Deep-Q learning which combines both the aspect of Model free reinforcement learning and deep learning. I successfully trained this model on the same data

which the previous model had shortcomings in training with OpenAI's gym environment. The overall result was this model performed better than its predecessor.

COVID-19 Open Research Dataset Challenge (CORD-19) by Kaggle: 25th April 2020 to Present.
Taking part in the CORD-19 research dataset challenge, I am currently in the process of visualizing data from research papers regarding the Corona virus. Using toolkits such as NLTK for python and machine learning techniques, the goal is to visualize incubation periods of the disease and age variations using a graph.

References.

Name	Role	Contact
Dr Yongjang Cheng	Senior Lecturer, Department of Computer Science	y.cheng@hull.ac.uk
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