

OMER KACAR

PROFESSIONAL SUMMARY

Computer Science graduate with analytical skills and knowledge that could be applied to the role of an AI Engineer. As a result of excellent academic results and completing numerous projects, became proficient in Java and designed and developed applications in C++, JavaScript, PHP, HTML/CSS.

EDUCATION

BSC COMPUTER SCIENCE, MIDDLESEX UNIVERSITY

2019 – 2022 APRIL

Year 3 – Predicted Grade: First Class.

Modules:

- Artificial Intelligence: Categorisers, deep neural nets, machine learning algorithms, linear algebra, and calculus
- Advanced Web Development and Big Data: Java, Node, Express, Cloud Based Development (AWS)
- Testing and Verification, Undergraduate: JUnit testing, black box testing, test coverage, code contracts
- Individual Project (Eye Tracking PDF Reader Website Application): Node.js, AWS (DynamoDB, Comprehend)

Year 2 – Grade: First Class:

Modules (Scored 1 out of 20 for all modules, with 1 being the highest):

- Software Engineering Management and Development: C++, Algorithms and Data structures, SDLC, testing
- Object Oriented Programming: Java, APIE (OOP)
- Web Applications Databases HTML, CSS, JavaScript, PHP, Node.js, Mongo-DB, MySQL
- Operating Systems and Networking: Linux, Shell Scripting, Threads, Processes, Cisco NetAcad.

Year 1 – Pass: Modules Computer Science Fundamentals, Design, Programming, Systems and Architecture.

KEY PROJECTS (GITHUB FOR MORE INFORMATION AND PROJECTS)

JAVA

Optical Recognition of Handwritten Digits (ongoing)

- Implementing algorithms such as a k-nearest neighbours and support vector machines from scratch and then feeding them with a training dataset to classify handwritten digit data with an accuracy of over 98.3%.
- Utilising: JUnit, k-nearest-neighbours, support vector machines, data structures

Travelling Salesman Problem

- Implemented a multi-threaded genetic algorithm that can find the shortest path between 20 cities in less than 100 milliseconds.
- Developed exhaustive algorithms (i.e Dijkstra's, permutation) that finds the optimum solution for up to 11 cities.
- Optimised the nearest neighbour algorithm by 8%, resulting in just 8% deviation from the optimal path when applying the algorithm from another city.
- Utilised: JUnit, Algorithms, data structures, OOP, Artificial Intelligence

Artificial Intelligence (AI) Laboratory (CST3170)

- Utilised the ID3 algorithm and a dataset to split a decision tree in a way to categorise a patient with the correct lens type for their eyes.
- Implemented linear categorisers, self-organising maps, state-space search (missionaries and cannibals' problem), and case-based reasoning (Euclidean distances, k-nearest neighbours) algorithms thus far.
- Leveraged Knowledge: In AI, categorisers, deep neural nets, concepts of linear algebra and calculus.

University-Student-Grade-Classification

- Implemented a university's Grading System by following the description on the university's website.
- Used the IDE's Code Coverage feature and numerous testing methods, such as equivalent classes, boundary value analysis, control flow graphs, parameterised tests to increase the branch coverage of class files to 100%.
- Utilised: JUnit, OOP, Test Driven Development

Price Comparison Website

- Developed a multi-threaded web crawler that scraped 600 products from 5 stores in less than a minute using Spring, Hibernate, and Selenium.
- Implemented SQL joins and streamlined multiple queries to obtain data from two tables, leading to a Node.js REST API.
- Utilised: Node.js, SQL, JUnit, Mocha/Chai, Spring Boot, Hibernate, Selenium, multithreading

Library Management System

- Improved a library system's speed to $\Theta(\log(n))$ time by implementing a binary search tree.
- Inspired by how software engineering has improved the speed and space of systems.
- Utilised: Catch2, Makefile, Algorithms and data structures.

CLOUD BASED DEVELOPMENT

Data Visualisation Website (AWS)

- Used SageMaker's DeepAR algorithm to predict future crypto prices, resulting in a time series forecast.
- Built a live pie chart showing sentiment analysis of cryptocurrencies using AWS Comprehend and Twitter API.
- Integrated the static website (S3) with Lambda triggers and API-Gateway to display a live graph and pie chart.
- Utilised: AWS, SageMaker, Lambda, Comprehend, S3, IAM, CloudWatch, API-Gateway (WebSocket) Node.js, Plotly, TypeScript, Axios, Twitter API, Express, AWS-SDK, DynamoDB

SKILLS

(Proficient): Java, JavaScript, Unix, Git *(Familiar):* PHP, Python, C++, Prolog, SQL, MongoDB, DynamoDB, HTML/CSS

WORK EXPERIENCE

English and Mathematics Tutor - Explore Learning

2018 February – 2019 January

- Over a period of one year, the number of students increased to nearly 2000, and I was involved in a teaching system that increased students' mathematics grades by 30%, allowing me to gain knowledge on the effectiveness of the right approach to teaching.

Sandwich Artist - Subway

2016 September – 2018 February

- The most organised shop in the region through effective management of the store myself or working closely with the manager

VOLUNTEER

Nur Cultural Education Association

2014 October – Present

- Youth numbers increased from 20 to 70 due to the endearing support received, such as patience, planning, and prioritisation, all of which I have learned to appreciate more.

REFERENCES

Available upon request.