Shaanuka Gunaratne

Software Engineer

shaanukag0@gmail.com
linkedin.com/in/shaanuka-gunaratne-a11629176 github.com/Shaanukstar123

PROJECTS

REAL-TIME ONLINE MULTIPLAYER GAME
07/2019 - 03/2020

This was my first programming project. I built an online shooter game using Python's game and network libraries. I then hosted it on an AWS EC2 server and built a system where players could broadcast their own local servers or connect to one global server and play against each other.
Skills gained: Python, Networks and TCP Sockets, Game Development/Testing, Multi-threading, SSH, Databases and SQL, Git, OOP, AWS.

Building a C Compiler
02/2022 - 03/2022

One of the most challenging projects I've been a part of. Working as a pair with my peer, we were able to build a fully functional C compiler that could convert high-level code into MIPS Assembly. For this project we had to learn lexing, parsing, scripting (bash), building abstract syntax trees and combining all of these using high-level C++ OOP and Polymorphism.
Skills gained: C++, OOP, Polymorphism, MIPS ISA, Lexing, Linux, Git, Bash, Scripting, Testing.

Group Project: Motion-Controlled Online Drawing Game
02/2022 - 03/2022

I Built a Pictionary-inspired motion-controlled multiplayer drawing game in a team of 6 using an Intel DE10-Lite FPGA board. We used the FPGA's accelerometer + mathematical modelling for mapping hand movement and programmed a GUI for the game. Then created a server and hosted it globally on AWS. I was charge of both building the game on python and then managing communication between the server and clients.
Skills gained: Python/C, TCP Sockets, Game design, OOP, AWS, SSH/SFTP, FPGA, Git.

Machine Learning: Neural Networks and Decision Trees
10/2022 - 11/2022

I learned the fundamentals of machine learning through these group projects:
• Building a decision tree model that trained on Wi-Fi signal data surrounding a receiver. The program could pinpoint receiver's location given the Wi-Fi signal strengths surrounding it.
• Building a neural network library and training a model to predict house prices in California.
Skills gained: Neural Networks, Decision Trees, NumPy, PyTorch, Building a library.

Group Project: Mars Rover
05/2022 - 06/2022

In a group of 6 we created a Mars rover system that could:
• Autonomously explore a terrain using sensors (gyroscope, ultra-sonic, radar and camera)
• Identify objects using computer vision and communicate findings back to the web server
• Be fully remote controllable through an online web app and display it's data on the app

I developed the self-driving algorithm, built the communication system between the rover and webserver (MQTT), built a back-end for the webapp and managed rover data using MongoDB. I learned to work in a diverse team where members had different skills and we incorporate each into the design of our rover. The toughest part was fixing the final self-driving algorithm. This was very difficult to perfect for real-world conditions.
Skills gained: Node.js, Computer Vision, Robotics, MQTT, Networks, Arduino, AWS, MongoDB.

PROFESSIONAL EXPERIENCE

Engineering Intern
08/2019

Ramboll

Performed mathematical simulation models and used industry-level modelling software with engineers on real projects like modelling a new electrical layout for the Apple Store in Brussels.
Experience gained: Applied Mathematics, Industry tech, Team building, Problem-solving.

Computer Engineering Lead
07/2022

Imperial Outreach

Managed an assigned group of 8 students who were interested in my course and assisted them with software and hardware projects in a summer residential at Imperial College London.
Experience gained: Management, Organisation, Communication, Teaching.

IT Technician Intern
03/2017

64 Computers

Performed software debugging/troubleshooting and carried out hardware repairs.
Experience gained: Tech support, debugging, Communication, Problem-solving.

Maths and Computer Science Tutor
12/2020 - Ongoing

Self Employed

Tutoring the A-level Maths and Computing course and teaching programming in Python and assisting with software engineering projects.
Experience gained: Programming proficiency, Problem-solving, Teaching, Communication.

EDUCATION

Electronic and Information Engineering (MEng)

Imperial College London

10/2020 - 06/2024

- Learning advanced Mathematical and Engineering concepts such as ML, Computer Vision, Networks, Embedded Systems and Robotics.
- Applying the aforementioned concepts in Software Engineering projects.
- Data Science society member - Machine Learning with TensorFlow.

A-Level

Woodhouse College

09/2018 - 06/2020

- A*A*A Maths, Computer Science, Physics.
- Silver Award - British Physics Olympiad (top 8% of the country).

GCSE

Friern Barnet School

11/2015 - 06/2018

- Physics: Level 9.
- Maths, Computer Science, English Language, French, Biology, Chemistry: Level 8.
- English Literature, Geography, Product Design: Level 7.
- Grade Average 8.0.
- Computer Science Cup for highest skill in computing amongst all students.

LANGUAGES

Python

C/C++

JavaScript

MATLAB

Verilog

SQL

Shell Scripting

TECH SKILLS

MongoDB · Git · AWS · Web Development · Machine Learning · Computer Vision · Robotics · TensorFlow · TCP Sockets · MQTT