

Capable and confident in my work, with an excellent ability to communicate with my peers and devise complex yet efficient engineering solutions to any problem that may arise. Proficient in several languages and their associated tools and very quick to learn new skills.



<https://samin50.github.io>



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Website



London, United Kingdom

SKILLS

UI/UX Design

Big Data

Quartus

Communication

Verilog

FPGA

Computer Vision

Teamwork

Machine Learning

Dynamic Programming

Leadership

Big Data Analysis

Sentiment Analysis

NLP

AWS

PyTorch

LANGUAGES

Python

PCB Design

CAD Design

C/C++

Java

SQL

Verilog

Web Dev

EXPERIENCE

Amadeus IT Group - Software Development Engineer

09/2024 - Present

- Customer-facing role ensuring high-quality service and timely resolution of check-in issues for airline clients. Implements new features and supports continuous improvement efforts to maintain target performance metrics in production and test environments.

Amadeus IT Group - Software Development Intern

04/2023 - 10/2023

- Developed two Python-based tools to automate Confluence page maintenance and analyze Java-based product data, saving hundreds of hours of manual effort.
- Led multiple demos to cross-functional teams and delivered a well-received final presentation to senior leadership.

Jacobs - Software Engineer Intern

07/2019 - 08/2019

- Built a high-speed web scraper to gather and consolidate data into CSV files, reducing manual data collection from 120 websites/min (later throttled).
- Leveraged NLP, Twitter API, AWS, SQL, Python, and Power BI to create a real-time sentiment analysis dashboard, enabling data-driven insights on public perception.

EDUCATION

Imperial College London - Computer Engineering MEng

06/2020 - 07/2024

Master Thesis: Vision-Assisted Mechatronic Component Sorter (09/2023 - 06/2024)

- Developed an automated system for identifying and sorting electronic components (e.g., resistors, capacitors, LEDs) using computer vision techniques. Integrated custom 3D-printed mechanical parts, robust electronics, and multiprocessing-safe software to ensure real-time classification, concurrency management, and error handling. Designed a user-friendly interface and maintained cost-effective, modular components to streamline maintenance and future scalability.

Pentesting and Network Security (01/2023 - 04/2023)

- Explored SQL injection vulnerabilities, common attack vectors, and best practices in a hands-on Capture the Flag format, gaining practical skills in threat mitigation.

Deep Learning (01/2024 - 04/2024)

- Trained a CNN for image classification with hyperparameter tuning and data augmentation. Developed a DCGAN for realistic image generation and a Variational Autoencoder for image compression and reconstruction on the MNIST dataset.

Building a C-Compiler (02/2022 - 03/2022)

- Built a C compiler that generates MIPS Assembly from C code using Abstract Syntax Trees, Flex, Bison, and OOP-based C++.

Digital Systems Design (01/2023 - 04/2023)

- Optimized a mathematical function in SystemVerilog for FPGA deployment, enhancing both speed and resource efficiency.

Group Project: Online FPGA-Controlled Motion-Based Drawing Game (02/2022 - 03/2022)

- Utilized an Intel FPGA with a NIOS II Processor and accelerometer to create a multiplayer drawing game, featuring real-time smoothing, user controls via FPGA buttons/switches, and score displays on 8-segment LEDs.

EDUCATION CONT.

Self-Organizing Multi-Agent Systems (SoMAS) (10/2023 - 12/2023)

- Examined group theory concepts and personally built a Python/Pygame-based simulator. Agents competed and collaborated to maximize survival, with the simulator critical for debugging and behavioral analysis.

Hardware and Software Verification (01/2024 - 04/2024)

- Utilized Yosys and Dafny to formally verify Verilog hardware designs, and employed Isabelle to prove algorithm correctness.

Distributed Ledgers and Cryptography (10/2023 - 12/2023)

- Studied Proof-of-Work and Proof-of-Stake consensus mechanisms, implementing custom Solidity smart contracts to deepen practical understanding.

Portfolio Website/CV (05/2023 - Present)

- Showcases my projects in greater detail. Built using HTML, Tailwind CSS, and ReactJS (including this CV).

Digital Circuit Simulator and Simplifier (01/2019 - 12/2019)

- Developed a Python-based simulator capable of generating SOP expressions, truth tables, and providing advanced features like circuit saving/loading.

Dual Core CPU Design (06/2021 - 07/2021)

- Designed and tested a dual-core CPU at gate-level, executing a program to find the mean of an integer array in memory twice as fast as a single-core version.

Advanced Graphics and Ray Tracing (01/2023 - 04/2023)

- Implemented vertex and fragment shaders, smooth shading via normal interpolation, and ray tracing to render primitive objects with accurate reflections and light bounces.

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

- Fully autonomous Mars Rover which scanned the environment using a Computer Vision algorithm written in Verilog and C that I developed - the Rover had the task of avoiding coloured balls as obstacles in an unevenly illuminated room. The designed algorithm was able to identify the distance to each distinct target and performed HSV conversions to find them. Additionally, the algorithm was able to perform noise rejection, and ignore any cluster of pixels that were not part of the larger body of the obstacle.

Group Project: Pet Feeder (10/2022 - 01/2023)

- Developed a IoT pet feeder that could accurately weigh and dispense food into a bowl. I took charge and designed the entire mechanical workings of the system using my 3D printer and CAD software. Later, I integrated Computer Vision into the controller's camera to provide the ability of distinguishing between different pets.

Group Project: Embedded Piano (01/2023 - 04/2023)

- Wrote the firmware for interconnecting piano modules to play and record piano using different piano voices. The piano supported 8 key polyphony, limited by the hardware constraints of the modules.