

# Harith Al-Safi

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Electronics and Computer Engineer | C++ Engineer

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## 📄 About me

An engineer with great enthusiasm towards data science and Artificial Intelligence. Some of my hobbies are working out, trading and investment. A deterministic outlook characterize my approach to tackling challenges.

## 📁 Experience

### Robot Engineer

📅 Dec 2023 - Mar 2024 (4 Months)

Robot Fight League

📍 Leeds, UK

- Designed a 3D CAD for robot fight league using Solidworks, Blender and Jira for project management
- Implemented a control system using Arduino and C++ for the robot's movement, sensors and pneumatic system
- Tested object detection and tracking using OpenCV and Python for the robot's vision system
- Managed a team of 5 engineers to develop the robot and compete in the league ending up 1<sup>st</sup> place

### Frontend Developer

📅 Aug 2023 - Nov 2023 (4 Months)

Velz Travel

📍 Remote

- Directed the frontend of a travel web app for a startup built with Next.js, React.js and Typescript
- Developed user interface using Material UI following Figma design guidelines and business logic using Node.js
- Collaborated with developers using Jira and Git whilst working on Java Springboot with PostgreSQL and Docker
- Delivered app through CI/CD, agile development, unit testing with 93% coverage and AWS deployment

### Software Engineer (Placement Year)

📅 July 2022 - July 2023 (12 Months)

Johnson Controls

📍 London UK

- Administered C \C++ projects while fixing bugs, adding features, refactoring and migrating 90% of codebase to C#
- Developed C# .NET libraries for fire detection simulations and data analysis improving operations by 32%
- Collaborated on an analytics web dashboard with React.js for predictive maintenance with dev ops and CI/CD
- Invented a custom scripting language with a compiler for C# app increasing development productivity by 40%
- Maintained Python automation scripts for automated builds of .NET applications and processing data with Azure
- Managed a team of 10 interns to create a business plan and ended up placing 2<sup>nd</sup> amongst the whole company

### C++ Developer Freelance

📅 Dec 2021 - Mar 2022 (4 Months)

Paperound

📍 Leeds UK

- Developed signal processing filters and modulators using SciPy Python, C++ and Fourier analysis for RF signals
- Developed distributed system using C++ OpenMP, OpenCL and CUDA for parallel statistical computing
- Developed low level ARM embedded systems with C whilst using memory allocation and register programming
- Built a lexer, compiler and assembler with C for an 8-bit CPU built with Logic Gates and Verilog
- Created a desktop application using C++ and QT for video analysis and processing
- Engineered a high performance C++ linear algebra library for data science through Jenkins, Docker and Cmake

### IT administrator

📅 Jun 2020 - Mar 2021 (10 Months)

Mesopotamia Group

📍 Amman Jordan

- Collaborated with a team to build a local file server on Ubuntu built using Apache and Nextcloud
- Administered the server using Bash, Python and Nmap with SSH tunneling and port forwarding
- Engineered a load balancer using MPI and C to distribute traffic between servers increasing availability by 34%
- Analyzed the network data logs using Python to predict and prevent cyber attacks
- Implemented Linux networking and protocols using IP addressing and routing for cloud hosting

## 📖 Education

### BEng (Hons) in Electronics and Computer

📅 Sept 2019 - June 2024

University of Leeds (UoL)

🏆 First-Class Honors

- Embedded systems, Microprocessors, FPGA, Circuit Analysis, Signal processing, Networking, Compiler design
- Cloud and Parallel computing, Secure and Distributed systems, Cybersecurity, Software Engineering, Research

## Skills and Languages

**Technical:** C \ C++ Python Java C# JavaScript Linux Docker Azure AWS Jira Git  
Jenkins Terraforms Kubernetes SQLite MySQL MongoDB PostgreSQL .NET WPF JavaFx  
React Js QT Framework Flutter Flask Springboot ASP.NET NumPy KerasRL Matplotlib  
Pytorch SciPy TensorFlow Pandas OpenCv CMake Node.js OpenCL OpenGL OpenMP  
CUDA Arm Mbed Os Arm Keil FPGA Verilog HDL Arduino Blender Photoshop AutoCAD

**Soft:** Management Leadership Motivated Deterministic Communication Problem solver

**Languages:** Arabic (Full Professional)

English (Full Professional)

Spanish (Elementary)

## Projects

**MCPP: High Performance C++ Library for Numerical Computation**  Apr 2021 - Oct 2022  Personal

- Created a cross-platform math library for C++ used for matrix algebra, statistics and machine learning.
- Engineered with CI/CD using Jenkins, unit tests, Docker, Cmake, Doxygen and Git for version control
- Improved performance by 40% using parallel computing with OpenMP, OpenCL and CUDA

**TBot: Machine Learning Stocks Trading Bot**  Apr 2021 - Oct 2021  Personal

- Developed gradient boosting machine learning model using Python and Scikit-learn for stock prediction
- Anlayzed and processed data using Pandas, Numpy and Scipy for training and testing the model
- Backtested the model using historical data and simulated trading using Python and Matplotlib
- Developed a REST API and a user interface to interact with the bot using AWS, Flask and PyQT

**Vega: LLM Chat Web App for IoT Circuits**  Oct 2023 - Jun 2024  UoL

- Developed a full stack chat bot web application with Typescript, React.js, Next.js, TailwindCSS and NoSQL
- Programmed natural language processing algorithms using LLMs to interpet and execute user messages
- Developed a Python Flask REST Server with SQLite on the Raspberry Pi to communicate with the chat bot
- Engineered a circuit with sensors, fans, LCD and buttons to execute the user's commands from the chat bot

## Professional Courses

**Data Analysis with Python**  Oct 2021

- Develop Python code for cleaning and preparing data for analysis
- Perform exploratory data analysis and analytical techniques to datasets using Pandas, Numpy and Scipy
- Manipulate data using dataframes, understand data distribution, perform correlation and create data pipelines
- Build and evaluate regression models using machine learning scikit-learn for prediction and decision making

**Databases and SQL for Data Science with Python**  Sept 2021

- Analyze data within a relational database on the cloud using IBM DB2, SQL, Python
- Construct SQL CRUD operations and compose views, transactions, stored procedures and joins.

**Python for Data Science, AI & Development**  Aug 2021

- Demonstrate proficiency in using Python libraries such as Pandas, Numpy, and Beautiful Soup
- Access web data using APIs and web scraping from Python in Jupyter Notebooks.

## Extracurricular

**AI Agent hackathon**  Mar 2023  
Lablab  Remote

**Web Developer hackathon**  Feb 2023  
Royal Hackaway v6  London, UK

**Event Coordinator Volunteer**  Jan - 2023  
IEE RAS ICRA  London, UK