

# Zaher Faruk

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## EDUCATION

### The University of Salford

BSc Physics in Physics

Salford, England

September 2022 – June 2025

### Ashton Sixth Form College

Maths, Physics, Computer Science

Ashton-under-Lyne, England

September 2020 – July 2022

## PROJECTS

### Producing and Engineering a Drone | C++, Fusion 360, Arduino, Tinkercad September 2023 – June 2024

- Arduino Programming: Developed and programmed the drone's flight control system using Arduino, implementing real-time control algorithms using C++
- Circuit Design and Hardware Assembly: Designed and assembled the drone's electronic components, including the motors, ESCs, and flight controller
- CAD modelling with Fusion 360: Designed and modelled custom drone parts using Fusion 360 to ensure precise fit and functionality
- Troubleshooting and Debugging: Diagnosed and resolved hardware issues with the Arduino chip and software issues in C++ during the testing and development phase

### Programming Quantum Computers | IBM Quantum, PennyLane, Microsoft Azure October 2024 – Present

- Gained hands-on experience with a variety of quantum technologies, including superconducting qubits (IBM Quantum), photonic systems (Xanadu), trapped ions (IonQ), and quantum annealing (D-Wave)

### Non-Analytic Basins and Chaotic System Simulation | MATLAB September 2024 – October 2024

- Numerical Solution Using ODE Solver: Used MATLAB's ode45 function to numerically solve the ODEs for both original and perturbed initial conditions over a defined time span
- Visualisation of Chaotic Dynamics: Generated time-series plots to illustrate the sensitivity to initial conditions and a 3D plot to visualise the chaotic attractor in phase space

### Lennard-Jones Potential Plotting | Python, NumPy, Matplotlib October 2023 – November 2024

- Data Processing and Analysis: Loaded and processed atomic separation and potential energy data from CSV files using Pandas for data manipulation
- Mathematical Modelling: Calculated the Lennard-Jones potential values using NumPy, implementing the potential energy formula to model interatomic forces
- Data Visualisation: Plotted experimental data and theoretical potential curve using Matplotlib, comparing atomic separation with potential energy
- Algorithm Optimisation: Utilised NumPy's linspace to generate smooth, high-resolution data points for accurate visualisation of potential curves

### Simple Harmonic Motion Simulation | Python, VPython, GitHub September 2023 – May 2023

- Applied Python libraries like VPython to create interactive visualisations and simulations, demonstrating proficiency in using tools for scientific computing
- Created a physics simulation in VPython to model and analyse Simple Harmonic Motion (SHM)
- Used object-oriented programming to structure and optimize the simulation model
- Gained experience in testing and debugging code by analysing data-driven results to refine simulation parameters

## EXPERIENCE

### Information Technology Support Specialist

Microtech Computers

September 2018 – August 2019

Ashton-under-Lyne, England

- Operating System Installation: Installed and configured operating systems via BIOS, ensuring smooth setup and performance
- System Testing: Performed post-repair tests to verify system stability and ensure that repairs were successful