07391574620
suhailmall98@gmail.com

Suhail Shoaib Mall

Physics Graduate from Imperial College London

github.com/suhail-mall/projects
linkedin.com/in/suhail-mall

Education

MSci Physics with Theoretical Physics, Imperial College London **2017 – 2022**
Overall Mark: **67.3%**
Year 1: **69.1%** | Year 2: **68.9%** | Year 3: **69.0%** | Year 4: **64.7%**

Cardinal Newman College **2015 – 2017**
Mathematics: **A*** | Chemistry: **A*** | Physics: **A**

Background

Mathematics

- Studied in a field that requires a very high mathematical foundation, and have applied this in theoretical physics modules.
- Have taken several modules (e.g. Differential Equations, Mathematical Methods) in mathematical techniques, giving me the confidence to derive a set of differential equations to describe a system and solve them using a variety of techniques, both analytically and numerically.
- Have taken several modules in statistical methods and applied these to various laboratory and computational projects (discussed below). Used this for data analysis and data visualisation.

General Problem-Solving

- General requirement of a high degree of problem-solving and lateral thinking.
- Third year *Comprehensives* module covered all content in first and second year, with a focus on problem-solving and bringing together several distinct areas of physics.

Relevant Experience

Master's Project **Oct 2021 – May 2022**
Supervised by Dr Jonathan R Pritchard, Imperial College London

- Used Python to model galaxy luminosity density using abundance-matching techniques and a feedback-regulated model of star-formation.
- Used data engineering techniques to compile large astronomical data so that they could be used efficiently to calibrate the model to existing data using Bayesian inference techniques.
- Extrapolated the model forward to higher redshifts to make predictions of future surveys such as with JWST.

Computational Physics Module (Python) **Oct 2018 – Jan 2019**

- Theory and implementation of common algorithms used in physics, and projects: matrix methods, interpolation, Fourier transforms, RNG and Monte Carlo methods, function min/maximisation, finite differences for solving PDEs and numerical integration.
- Project on modelling neutrino oscillation by comparing several methods of likelihood maximisation.

Statistical Mechanics Project: *Complexity and Networks* (Python) **Jan 2020 – Mar 2020**

- Implemented the Oslo Model using Python OOP to investigate and visualise the scaling functions of complex systems. Also demonstrated creative methods to increase efficiency of the implementation.
- Used the *NetworkX* Python package to investigate the statistical mechanics of growing basic networks and comparing to results derived from theory.

Summer Research Internship **July 2019 – Sep 2019**
Supervised by Professor Zulfikar Najmudin, John Adams Institute for Accelerator Science, Imperial College London

- Convergence-tested *FBPIC* code used to simulate plasma interactions with laser beams for experiments at the Central Laser Facility. Presented findings using Python data visualisation tools.
- Submitted batch jobs to the Imperial College HPC service using Bash scripting, SFTP, and SSH protocols.

Thermodynamics Computing Lab (Python) **Jan 2019 – Feb 2019**

- Used Python OOP to simulate a container of gas molecules to investigate the resulting thermodynamics. Required rigorous testing and data visualisation.

First Year Computing Demonstrator (Python) **Oct 2021 – Nov 2021**

- Taught fundamental Python skills to first year physics students using Jupyter Notebooks. Enjoyed thinking of unusual scenarios and interesting solutions to instructive problems.

References and transcript available upon request