NIAM PATEL

PhD Physics Candidate

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ABOUT

I am a final year PhD Candidate working on the MicroBooNE experiment at Fermilab. I am passionate about Physics and using research and advances in technology in the wider world. I also have a strong interest in programming and the problem-solving aspect behind it, and my experience means that I can adapt quickly to new technologies and environments.

EDUCATION

Particle Physics PhD.

Lancaster University

 October 2020 – Current   Lancaster, Lancashire

- Thesis Title: **Measuring the Antineutrino-induced Sigma Zero Production Cross-section in the MicroBooNE Detector**.
- Measuring the cross-section of sigma zero baryon production from neutrino interactions in MicroBooNE, helping to constrain neutrino oscillation experiments and to shed light on a rare process.
- Programmed using C++ and Python and also interfacing with the ROOT scientific programming framework.
- I also calibrated the electronics gain for MicroBooNE's newest data runs; a step towards validating their use in major physics analyses.

MPhys (Hons). Physics, Astrophysics and Cosmology

Lancaster University

 October 2016 – June 2020   Lancaster, Lancashire

- Received a **First Class grade**.
- Created a C++ based workflow to process cosmic ray data from the MINOS experiment, aiming to characterise the anisotropy of high-energy particles coming from our galaxy.
- Completed astrophysics-focused research and laboratory work: producing light curves for a binary star system, and assessing the relationships between solar storms and Earth's geomagnetic field.
- Completed courses including Space science, Astrophysics, Quantum Information Processing and General Relativity.

A Levels

Runshaw College

 September 2014 – June 2016   Leyland, Lancashire

A, A, B (A Level) and A (AS) grades in Physics, Maths, Chemistry and Computing.

EXPERIENCE

Student Ambassador

Lancaster University Physics

 June 2017 – April 2022   Lancaster, Lancashire

- My roles include touring groups of prospective candidates and management of large groups and schedules on busy interview and open days.
- Managed large groups of prospective students and guests and clearly presented Lancaster Physics and the University experience.
- From 2014 – 2016 I also worked as an Ambassador for Runshaw College, fulfilling many of the same roles as I do now.

STRENGTHS

Hard-working   Eye for detail
Strong initiative

Web Development   Scientific Programming
Data Visualisation

EXTRA-CURRICULAR

Physics Society

Lancaster University

 2017 – 2020

- Organised academic talks, social and fundraising events as Vice President.
- Managed and tracked expenses as Treasurer.
- Engaged with students and staff from all areas of the Physics department.

Hackathons

 2012 – 2018   Various

In several programming events I created and presented projects in a group or alone with a short time constraint. Projects have included:

- A medical scoring calculation API to avoid prior mistakes with closed-source GP system-based calculators.
- A service to track London Olympics team & athlete rankings and increase young people's involvement in sport by linking them to nearby sports clubs.
- An Amazon Alexa add-on to request bus times via voice.

IT SKILLS

Python, Ruby, HTML/CSS   ●●●●●

Java, JavaScript   ●●●●○

System Admin, C/C++, Go   ●●●○○

EXPERIENCE

Accommodation Room Checker

Lancaster University

📅 June 2018 – September 2019   📍 Lancaster, Lancashire

- Aided the University Accommodation team in assessing the previous condition and readying rooms across campus for new students.
- The quick turn-around time at the University required good time management, attention to detail, organisation and initiative with quickly changing situations with waiting contractors.

PROJECTS & INTERNSHIPS

Cyber-Security Internship

Deep3/Lancaster University

📅 July – September 2019   📍 Lancaster & Manchester

- Worked with Manchester-based company Deep3 over 8 weeks to research and prototype methods of dynamically testing their Intrusion Detection System (IDS).
- Independently researched papers and explored solutions created from the past 25 years. Also provided data analyses of captured network packets via the Python programming language.
- Organised meetings with third-parties to gain insights into cutting-edge solutions.
- Collated findings for a report and presentation to Deep3.

Lancaster Astrophysics Metal Poor Star Search

Lancaster University

📅 January – March 2019   📍 Lancaster, Lancashire

- A group research project involving the use of Cosmic Evolution Survey and Canada-France-Hawaii Telescope data to find Population III stars in our Galactic Halo – the oldest stars in the Universe which lack heavy metals.
- In the group I had an Administrator/Work Package lead role, my work primarily focused on data analysis and other scripting via the use of Python, and keeping minutes of group and supervisor meetings.
- Culminated in writing a report/paper and finding several candidate stars – we await feedback on a research proposal using the Isaac Newton Telescope to further investigate these.
- Presented our process and findings at two student conferences.

Clinical Calculator API

Young Rewired State (YRS)

📅 August – September 2015   📍 Leigh, Birmingham & Manchester

- As a group of three, created an open-source medical score calculation Application Programming Interface as a more flexible and safer alternative to current GP system score calculations, which can be easily implemented into existing technology.
- We devised and implemented over the course of a week during the YRS Hackathon. We presented to over 1000 people at the YRS finals.
- This project also won the NHS Obesity Data Challenge (from joint US & UK entrants) and was presented at the NHS Health and Care Innovation Expo 2015 to healthcare professionals.

INTERESTS

Climbing   Graphic Design
Space Exploration   Photography
Music Production   Technology   Writing
Theatre   Engineering   Physics

OTHER EXPERIENCE

GP Administration Assistant

📅 April 2014   📍 Buckshaw Village Surgery

- Digitised all of the practice's paper documents to electronic formats, in some cases recreating and upgrading their procedures.
- Manned an essential Deep Vein Thrombosis helpline for the connected elderly home.
- Managed patient information for hospital discharges and communicated information to relevant departments securely.
- Upgraded the GP website, adding a Google Maps interface for patients to view the GP catchment area and updated information – liaising with the website hosting company.

REFEREES

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