Jack Lloyd-Walters

FRAS

Contact

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Programming

- ♥ Python — Expert
- Javascript — Advanced
- LaTeX — Advanced
- Markdown — Advanced
- HTML/CSS — Intermediate
- Kerboscript — Intermediate
- Lua — Intermediate
- Fortran — Intermediate
- SQL — Intermediate
- Assembly — Mediocre
- C# — Mediocre
- C — Beginner
- RPython — Beginner

Languages

- English — Mother tongue
- Japanese — Beginner

Profile

Final year Masters student with a passion for Python programming, exoplanetary science, gravitational wave astronomy, and the Japanese language. Looking to begin a career in computational physics, focusing primarily on astronomical research or spacecraft operations.

Education

2022-02 – Now — **AI & Data Engineering** — AiCore

- Certified in the practical application of AI & Data Engineering using industry-standard tools including:
  - Software engineering (Git & GitHub, advanced Python, algorithms & data structures)
  - Data engineering (SQL, data lakes, data warehousing, web scraping)
  - Data science (Data cleaning, preprocessing & visualisation, A/B testing, feature engineering, statistical modelling, model selection and implementation)
  - Cloud Engineering (cloud computing, designing and building APIs, Docker, Apache Airflow, AWS Serverless Stack)
- Worked on multiple industry projects throughout.

2018 – 2022 — **MPhys (Hons)** in Physics, Astronomy, and Cosmology — University of Portsmouth

- Level 7 Masters Project utilising Computational modelling and a combination of first hand telescopic observation and supplementary data to measure the properties of transiting exoplanets, and develop analytical models of transit timing variations to investigate the potential properties of other bodies in the system, and computational methods for recovering them. This project was summarised with a 6000 word dissertation, 10 minute presentation/discussion, and scientific poster presentation.
- Level 6 Bachelors Project utilising Computational modelling and signal processing to identify Glitch events within the LIGO Data-set. This project was summarised with a 5000 word dissertation, 10 minute presentation/discussion, and LaTeX Compatible result list.
- First year average mark: 76.6%, on track to achieve a first at the completion of the degree.

2016 – 2018 — **A-Level** in Physics (A), EPQ (A), Maths (B), Further Maths (D) — Peter Symonds College

- Level 3 Extended Project Qualification study on the habitability of earth like exoplanets on the prospect of extra-terrestrial life, intelligent or otherwise, particularly in and around long lived M-Dwarf stars. This project Primarily Utilised Research, critical evaluation skills, and light programming (Particularly Excel with minimal Python). This project was summarised with a 20000 word dissertation and 15 minute presentation/discussion.
- Additional AS-Level (A) in Chemistry

2011 – 2016 — **9 GCSEs** Grades A* to B — City of Portsmouth Boys School

Including Maths, Science, English, and Computer Science

Professional Membership

2020 – Now — **Fellow** – Allows the use of the postnomen "FRAS". — Royal Astronomical Society

2020 – Now — **Member** — European Astronomical Society

2018 – Now — **Associate Member** — Institute of Physics

Curriculum Vitae typeset from a TEX/LATEX file prepared by the author. Last updated 18th May 2022.

Work

2017 – 2019 **Floor Staff** B&M

- Managed fast moving customer goods primarily, seasonal stock for the four months leading up to the new year secondarily.
- Managed other store areas at request, requiring up-to-date knowledge of most of stock.
- Dealt with stock deliveries on most days and organised offloaded pallets in the warehouse daily.
- Coordinated delivery requests for large customer purchases on a biweekly to monthly basis.

Projects & Publications

2022-Ongoing **Masters Project** University of Portsmouth
Determining The Parameters of Exoplanetary Candidates From Transit Timing Variations.

2022-Ongoing **Data Science Project** AiCore
An implementation of a combined data science and AI pipeline to predict outcomes based on past data, currently ongoing

2022-04 **Data Collection Pipeline** AiCore
An implementation of an industry grade data collection pipeline that runs scalably in the cloud. Utilised Selenium4 and Docker to build the scraper, AWS S3 RDS and EC2 to scalably store and run in the cloud, Prometheus and Grafana to monitor the instance, and GitHub actions for CI/CD.

2022-02 **Computer Vision Rock-Paper-Scissors** AiCore
Trained a computer vision model and used Tensorflow to detect whether Rock, Paper or Scissors is shown to the camera in real-time and with a high accuracy.
Used the OpenCV library to access the webcam and play Rock Paper Scissors with the computer using the image from the camera.

2021-05 **Bachelors Project** University of Portsmouth
Distinguishing Intermediate Mass Black Hole Mergers From Short Duration Glitches.

2017-12 **Extended Project** Peter Symonds College
Is There A Possibility Of Extrasolar Habitation.

Hobbies and Interests

Coding Projects

- Began developing two programming languages, "Skiylia" and "Verbsocript", to better understand how compilers, interpreters, and programming languages as a whole work. Base implementation in Python 3.9 due to familiarity, learning to implement the two in C and RPython respectively to facilitate knowledge of widely used Programming languages, and the many challenges of memory management, garbage collection, and design trade-off.
- Developed watch faces for the FitBit platform for personal use using JavaScript, the FitBit CLI, and GitFlow. Required understanding of the specific FitBit JavaScript package, knowledge of good UI and UX design, and how to fetch and manipulate data from API endpoints (specifically the OpenWeatherMap).
- Ongoing development of a personal website from scratch with the use of GitHub pages, Jekyll, HTML/CSS, JavaScript, and Markdown. Required understanding of good UI and the specifics of web-based development.

Gaming

- Kerbal Space Program, a spaceflight simulator, has lead to developing an intuitive understanding of orbital mechanics and mission design. Gained experience writing self-contained autopilot software using the "Kerbal Operation System" mod, dealing with realistic scale N-Body physics from

the "Real Solar System" and "Principa" mods, and using external tools such as GMAT to analyse all manner of orbital transfers and mission plans.

- Factorio, a factory building game with a focus on logistics and optimisation. Led to the development of a good understanding of efficient design practices, scalability, problem solving, and optimisation, all of which directly influenced abilities in other areas.

Skills

Programming Excellent knowledge of programming, having began in early 2011 with Python and HTML/CSS and have steadily picked up other languages as time has passed. Have gained familiarity with Unix due to using Ubuntu as the OS on my Personal Machine from early 2021 onwards.

Language English native speaker, with beginner Japanese that I am currently working on as part of a language course at university. My eventual aim is bilingual fluency, but I am currently aiming to pass the Japanese N5.

Office Proficient with Excel, Slides, Jupyter, and Overleaf for all required office workloads, with specific skills focussing on the methods required to manipulate data, write and present research papers. While I am Proficient with Word/Publisher/Docs, I much prefer LaTeX Typesetting.