Alex Goater, PhD

Physicist & Creative Problem Solver

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Analytical thinker with a PhD in Astrophysics. Passionate about applying strategic reasoning and advanced problem-solving to create robust solutions. Experienced in Python, Unix, High Performance Computing, Git (incl. Github) and statistical modelling with a demonstrated ability to architect and design efficient algorithms. Adept at breaking down complex technical challenges, iterating based on feedback, and collaborating effectively across teams.

Technical Skills

Python | Bash | Unix | HPC | VS Code | Git/GitHub | MCMC | Simulations

Key Projects

Galaxy Morphology Analysis Toolkit

Python • Data Analysis • Algorithm Design

Developed a comprehensive Python-based toolkit leveraging Bayesian inference and MCMC sampling to extract and analyse the morphological parameters of galaxies from simulation data. The project involved constructing a sophisticated likelihood model to account for observational uncertainties, implementing efficient numerical techniques to explore multi-dimensional parameter spaces. It resulted in a first-author publication in a leading astrophysics journal.

Life Tracking Application (bigtable)

React Native • Node.js • System Design

Real-time multiplayer app solving life tracking across gaming tables with instant sync for up to 6 players. Built with a Node.js WebSocket backend and React Native frontend to ensure low-latency updates.

Professional Experience

Digital Acceleration Internship

McAndrew Martin Ltd

Jan 2024 - June 2024

Improved technological infrastructure using Python and Microsoft Power for data-driven insights. Cut software costs by designing and delivering an in-house 'building survey' app on a strict timeline. Led development from concept to deployment, collaborating across departments to ensure seamless integration.

Education

PhD in Astrophysics

Sep 2020 - Dec 2024

University of Surrey

Master of Physics

Sep 2016 - Jun 2020

First Class with Honours

University of Portsmouth

Awards & Recognition

Laura Bassi Scholarship: Received the international Laura Bassi Scholarship, a prestigious grant awarded to those with groundbreaking research in underexplored fields of study.

Conference Funding: Secured competitive funding to organize and host an astrophysics conference, connecting researchers from multiple disciplines.

PhD Scholarship: Awarded the highly competitive Doctoral College Studentship to complete my PhD at University of Surrey.