

Max Talberg

Profile

[Email](#) | [GitHub](#) | [Portfolio](#) | London, UK

Data Science MPhil and Physics BSc with 2 years of experience as a data scientist, including a range of machine learning projects. Seeking challenging projects while learning from experienced data scientists and machine learning engineers in a welcoming community.

Languages: Python (pandas, NumPy, Scikit-learn, Matplotlib, TensorFlow, PyTorch), Git, Docker, CI/CD, C, L^AT_EX

Education

University of Cambridge, Queens' College | MPhil Data Intensive Science (Distinction) 2023 - 2024

- Modules: classical and Bayesian statistics, supervised & unsupervised machine learning, deep learning, high-performance computing.
- Thesis: *Re-examining the putative radial velocity detection of L98-59b utilising a Gaussian Process framework: How reliably can we measure the mass of an exoplanet just half the mass of Venus?* (85%)

University of Bath | BSc Physics (First Class) 2018 - 2022

- Modules: fluid dynamics in astrophysics, analysis and research for observational astronomy, mathematics, computational astrophysics, experimental physics & computing, quantum mechanics, thermodynamics, general relativity.

Esher College, UK 2016 - 2018

- Mathematics (A*), Physics (A), Art and Design (A)
- Silver award Physics Olympiad.

Experience

NDA | Developer May 2024 - Present

Intorqa (Gaming Security Startup) | Data Scientist Aug 2022 - Sept 2023

- Fine-tuned a large language model (LLM) on AWS using custom datasets for sentiment classification on video game chat forums.
- Constructed an image processing algorithm to filter thousands of Twitter images, compare to a leaked content database and automate takedown actions for Rockstar Games.

WPP (Formerly Satalia) | Data Scientist Dec 2020 - Aug 2021

- Developed a "Digital Twin" model for retail logistics using gradient boosting and time series forecasting, deployed via Dash with a TensorFlow backend for real-time simulation.
- Researched and presented novel "Digital Twin" use cases, resulting in a project optimising chemotherapy patient journeys.

Satori Tutoring | Co-Founder May 2017 - Present

- Established a tutoring company that caters to 11+, GCSEs, A levels, STEP and Oxbridge preparation.
- Coached 36 students to date and organised a team of tutors: <http://satoritutoringlondon.co.uk>.

Projects

Machine Learning & Data Science

- Academic Contribution - [Understanding Deep Learning](#) by Simon J. D. Prince.
- **Cold Diffusion Models** (TensorFlow) - Built a denoising diffusion probabilistic model (DDPM) from scratch, training a custom CNN to generate MNIST digits. Designed a cold diffusion variant with Gaussian blur and benchmarked performance using FID scores.
- **Gaussian Processes for Exoplanets** (George, PolyChord) - Engineered a GP-based nested sampling system to isolate weak planetary signals from stellar noise. Applied quasi-periodic kernels to model stellar activity using HARPS/ESPRESSO observational data.
- **Bayesian Inference for the Lighthouse Problem** (PyMC) - Applied MCMC methods using the No-U-Turn Sampler to infer a lighthouse's location, based on a classic Cambridge problem by S. Gull and discussed in [Data Analysis: A Bayesian Tutorial](#).
- **Monte Carlo Radiative Transfer** (C) - Simulated photon scattering through an atmosphere using Monte Carlo methods. Modelled isotropic and Rayleigh scattering to demonstrate the physical origin of sky colour and the role of mean free path in light diffusion.
- **Air Quality Analysis** (Scikit-learn) - Applied unsupervised ML and time series methods to high-frequency air pollution data. Identified seasonal patterns, flagged anomalies, and proposed improvements to sensor calibration and spike detection.

Computing & Tools

- High-Performance Computing (CSD3) - Leveraged GPU resources for astrophysics simulations and ML projects.
- L^AT_EX - Produced technical reports using L^AT_EX.

Personal Interests

Football

- Played for a club growing up, as well as in school and university, and now play weekly with a team in South London.

Event Manager

- Executed large-scale live music events, managing all aspects of preparation and leading teams to accommodate crowds of up to 600.