# Michael Belyaev

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## Education

**University of Edinburgh** Sep. 2022 - May 2027
*Mathematics MMath (Integrated Masters)* *Averaging a First Class (80%)*

**Relevant Courses:** Introduction to Algorithms and Data Structures, Machine Learning, Probability, Stochastic Modeling, Foundations of Data Science, Statistics

## Programming Skills

- **Programming Languages:** Proficient in **Python**; Experience with **Haskell**, **C++**, **Rust**
- **Libraries and Tools:** PyTorch, NumPy, Pandas, Matplotlib, Git/GitHub, LaTeX

## Experience

**LFCS Summer Research Intern**
*University of Edinburgh* Jun. 2025 - Jul. 2025
- Automated the design of low-precision arithmetic hardware for machine learning accelerators using Syntax-Guided Synthesis (SyGuS).
- Utilised PyTorch and the CVC5 SMT solver to generate and verify hardware logic.
- Delivered a synthesised 4-bit MXInt multiplier and adder, achieving 98.6% and 90.5% accuracy respectively.

**School of Informatics Research Intern**
*University of Edinburgh* Jun. 2024 - Aug. 2024
- Implemented and benchmarked dimensionality reduction techniques to evaluate performance trade-offs for approximate k-NN search.
- Accelerated an outlier detection algorithm by implementing Locality Sensitive Hashing (LSH), providing speedup in exchange for a small loss of accuracy.

**Demonstrator/Marker/Tutor**
*University of Edinburgh* Sep. 2023 - Nov. 2024
- Taught and mentored 8 undergraduate students, leading tutorials and grading assignments for the courses Introduction to Computation (Haskell) and Introduction to Data Structures and Algorithms (Python).

## Projects

**Neural Field Optimisation** Aug. 2025
- Faculty-supervised research project exploring the robustness and performance of novel optimisation techniques for neural fields.
- Experimented with fine-tuning training parameters and modifying loss functions to reduce artifacts in 3D surface reconstruction.

**HYPED Software Team**
*University of Edinburgh Hyperloop Society* Sep. 2023 - Jun. 2025
- **Localisation Project Manager** — Jan. 2024 - Jun. 2025
- **Localisation Subteam Member** — Sep. 2023 - Jan. 2024
- Led a team of 3 to develop the pod's real-time state estimation, designing and implementing the localisation system's sensor fusion.
- Engineered a Kalman filter to fuse accelerometer and optical flow data, achieving position estimates with <1% error against ground-truth.
- Ported the legacy C++ localisation implementation to Rust, redesigning the data cleaning process.

## Awards and Achievements

- Scottish Mathematical Challenge Gold in 2021 and Silver in 2022.
- Gold in the Senior UKMT.