Louis Forster

louisforster64@gmail.com | github.com/L-Forster | linkedin.com/in/l-forster

EDUCATION

University of Bristol Graduating 2026

MEng Computer Science with Innovation Grade: First Class (Predicted)

- **Modules:** Deep Learning, Internet Economics, Computer Vision & Image Processing, Machine Learning, Data Science, Linear Algebra.
- **Computer Vision:** Built multi-view 3D reconstruction in Open3D/OpenCV using epipolar geometry, triangulation, 3D radius estimation, and pose-noise analysis; also implemented a Haar-cascade no-entry sign detector with custom Hough circle voting and IoU/F1 evaluation.
- **Probabilistic Modelling:** Implemented Hidden Markov Model (HMM) state inference and Bayesian regression with posterior uncertainty estimation using PyMC.

Balcarras Academy 2020 – 2022

*A-Levels: 4 A*s (Computer Science, Mathematics, Physics, EPQ)*

- **Awards:** UKMT Silver (x5), Grey Kangaroo Qualifier.

WORK EXPERIENCE

Visual Computing Research Intern – Bristol Vision Institute Jun – Jul 2025

Second Author, TempRetinex – Accepted to IEEE ICME 2026 [Repo]

- Fine-tuned and evaluated RAFT and DPFlow optical-flow models on MPI Sintel using synthetic noise augmentation, PyTorch, and SLURM-scheduled NVIDIA A100 GPUs.
- Re-engineered the recurrent training loop to support bidirectional warping, forward-backward flow consistency validation, and adaptive occlusion masking.
- Stabilised the self-supervised low-light video enhancement pipeline, contributing to results that outperformed prior state-of-the-art baselines.

Teaching Assistant – University of Bristol Sep 2023 – Apr 2025

- Explained linear algebra, programming, discrete mathematics, and data science concepts to undergraduate cohorts; debugged student code and graded technical assignments.

Software Engineer Intern – Scribblepad Press Jul – Sep 2024

- Managed cloud deployment and frontend optimisation, increasing organic search traffic by 119%.

PROJECTS

OpenJet – Open-Source Local LLM Agent Harness [Repo] | openjet.dev

- Built an open-source local LLM harness and runtime for self-hosted coding agents on consumer hardware, reaching 900+ downloads and 46 GitHub stars.
- Implemented hardware-aware runtime configuration for llama.cpp and Ollama, adapting model execution to VRAM, context-window, and compute constraints.
- Developed approval-gated agent tooling for file operations, patch generation, shell commands, and session continuity across local and on-premises environments.

Treyspace – AI-native canvas [Repo] | treyspace.app

- Built a GraphRAG system mapping Excalidraw canvas elements to graph nodes, enabling LLMs to retrieve related context through graph traversal.
- Deployed and hosted on GCP with Docker, supporting 30 beta signups and 5,000+ AI interactions. Implemented MCP tools for querying graph and vector context.

NYC Taxi Demand Forecasting – Spatio-Temporal Graph Neural Networks [Repo]

- Built data engineering pipelines and spatio-temporal modelling components for 29.6M+ trip records and 4.6M+ zone-hour observations.
- Constructed graph inputs for a Spatial-Temporal Transformer (PDFormer), implementing representative-point mapping, rook-contiguity adjacency, disconnected-zone topology handling, and haversine-distance spatial relations.

TECHNICAL SKILLS

- **Languages:** Python, C, SQL, Bash.
- **ML & Research:** PyTorch, Transformers, optical flow, model evaluation, PyMC, Bayesian inference, HMMs.
- **Computer Vision:** OpenCV, Open3D, epipolar geometry, 3D reconstruction, Hough transforms, image preprocessing, IoU/F1 evaluation.
- **Robotics & Edge:** NVIDIA Jetson, Raspberry Pi, Arduino, embedded Linux.
- **LLM & Agents:** llama.cpp, Ollama, local inference, agent tool-use, RAG, GraphRAG, Model Context Protocol (MCP).
- **Infrastructure:** SLURM, Linux, Docker, GCP, Azure, Git, GitHub Actions, Redis, PostgreSQL, NumPy.