Lewis McGrogan

Final-Year MEng Computer Science Student — Queen's University Belfast
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Profile

Final-year MEng Computer Science student with a strong academic record, specialising in applied machine learning, distributed systems, and performance-aware software engineering. Experienced in building reproducible ML pipelines, developing full-stack web applications, and implementing concurrent, networked systems. Seeking graduate roles across software engineering, backend, and applied ML.

Final-Year Research Project — Knowledge Distillation for ECG Classification

- Developed an end-to-end ECG classification pipeline using the PTB-XL dataset (21,799 multi-lead recordings), including preprocessing, augmentation, model training, and evaluation
- Implemented a high-capacity CNN teacher and compact student CNN using response-based knowledge distillation
- Designed controlled experiments to evaluate the impact of temperature scaling, loss weighting, and student capacity on accuracy–efficiency trade-offs
- Achieved Macro-F1 ≈ 0.63 with the teacher model at preliminary stages; ongoing work focuses on improving teacher and student performance
- Built a fully reproducible PyTorch workflow with configuration-driven experiments and SLURM-based GPU execution

Selected Technical Projects

Distributed Chat System (Java)

- Designed and implemented a multi-client chat system using Java sockets and core concurrency primitives
- Implemented thread-safe client handling to support concurrent connections, message broadcasting, and graceful client disconnects

Facial Recognition Pipeline (Machine Learning)

- Implemented a classical facial recognition pipeline using handcrafted feature extraction techniques (HOG, LBP, Gabor)
- Trained and evaluated multiple classifiers (SVM, KNN, AdaBoost), analysing performance across feature representations

Full-Stack Web Applications

- Developed React and TypeScript applications for a team-based software engineering project, taking full ownership of the frontend and significant responsibility for backend development
- Integrated RESTful backend services with a focus on modular design, maintainability, and clear API boundaries

Technical Skills

Languages: Java, Python, TypeScript, MATLAB
Machine Learning: PyTorch, CNNs, knowledge distillation, experimental evaluation, classification metrics
Software Engineering: Object-oriented design, concurrency, distributed systems fundamentals
Web: React, HTML, CSS, JavaScript, REST APIs
Tools: Git, GitHub, SLURM, Vite

Education

Queen's University Belfast — MEng Computer Science *Sep 2022 – May 2026*
Final-Year Average: 81% | Expected classification: First-Class Honours / 2:1

Our Lady & St. Patrick's College, Knock *Sep 2015 – Jun 2022*
A-Levels: AAB | GCSEs: 10 A Grades, 1 A*