

Fraser M^cEwan

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PROFILE

Computer Science and Mathematics graduate with strong foundations in software engineering, algorithms, and analytical problem solving. Practical experience building substantial projects across C++, Python, and Go. Seeking graduate or junior roles in software engineering, with particular interest in backend, systems, and data engineering.

EDUCATION

University of Manchester

Sep 2021 – Jul 2025

BSc (Hons) Computer Science and Mathematics

2:1 (66.2%)

- Relevant modules: Algorithms and Data Structures, Data Science, Cognitive Robotics, Machine Learning, Linear Algebra, Probability and Statistics
- First-class dissertation (73%): *Quantum Conformal Prediction* — uncertainty quantification for quantum machine learning models

TECHNICAL SKILLS

- **Languages:** C++, C, Python, Go, JavaScript, SQL
- **Libraries / Frameworks:** React, SDL2, PyTorch, TensorFlow, NumPy, pandas
- **Tools & Platforms:** Git, Linux, Docker, Bash, CMake, Make, PostgreSQL, GitHub
- **Engineering:** OOP, SOLID Principles, Data Structures, Algorithms, REST APIs, Unit Testing, Debugging, System Design

PROJECTS

Chess Engine

Jul 2023 – Present

C++, SDL2, CI with GitHub Actions

[GitHub](#)

- Implemented full rules enforcement, move validation, castling, en passant, promotion, and game state management.
- Developed AI using minimax search with alpha-beta pruning and piece-square table evaluation for improved move quality.
- Validated move generation correctness with a perft test suite across multiple search depths.

Quantum Conformal Prediction

Aug 2024 – Jul 2025

Python, PyTorch, Qiskit, TensorFlow, CI with GitHub Actions

[GitHub](#)

- Designed and implemented a research framework for training parameterised quantum circuits and evaluating them using conformal prediction.
- Built a three-stage CLI pipeline (train, collect, predict) supporting multiple circuit architectures and scoring functions.
- Demonstrated empirical coverage guarantees across all tested distributions and scoring functions.

WORK EXPERIENCE

The Horseshoe Inn – Kitchen Porter

Nov 2022 – Sep 2024

Eddleston, Scotland

- Worked effectively within a fast-paced team environment to support kitchen operations during busy service periods.
- Maintained high cleanliness and food safety standards consistently under time pressure.
- Trained new starters on procedures and daily workflows, improving onboarding efficiency.
- Demonstrated reliability, resilience, and consistent performance in demanding conditions.