ANDREI LAZER

London, England | andrei.lucian.lazer@gmail.com | andreilazer.me | linkedin.com/in/andrei-lazer

Education

University of Oxford — **England**
MSc Mathematical Modelling and Scientific Computing — Oct 2025 – Aug 2026
- Dissertation topic in High Performance Computing.
- **Relevant modules**: Continuous Optimization, Stochastic Control, Numerical Linear Algebra.

University of St Andrews — **Scotland**
BSc Mathematics — Sep 2022 – Jun 2025
- First Class Honours (4.0 GPA Equivalent), Dean's list every year. Specialised in computational maths.
- **Dissertation**: Time-splitting spectral methods for the Schrödinger equation in the semi-classical regime.
  - Numerical analysis project implemented in **Python**.
- **Relevant Modules**: Finite Difference Methods, Financial Mathematics, Markov Chains, Stochastic Methods in Math. Biology.

Experience

Qube Research & Technologies — **Sep 2026 – Mar 2027**
(Incoming) Quantitative Technologist Intern — *London, England*
- Member of the crypto team.

NVIDIA — **Jun 2024 – Nov 2024**
Software Engineer Intern — *Remote*
- Member of the team responsible for implementing cryptographic standards into NVIDIA's automotive SDK.
- Wrote an extensible fuzzing framework using AFL++, achieving **98%** edge coverage and **100%** function coverage.
- Extended to a part-time role during the semester based on performance and contribution to the team.

University of Oxford — **Jul 2023 – Aug 2023**
Research Intern — *Oxford, England*
- Conducted a 2-month research project in computational string theory.
- Used the symbolic regression library PySR to automatically discover solutions to a coupled system of differential equations.
- Implemented numerical and symbolic methods in Julia, developing a prototype which can reconstruct one equation given the other.

Projects

Limit Order Book
- Wrote a fast limit order book in **C++** to explore market microstructure.
- Matching engine publishes events into a **lock-free ring buffer**, enabling non-blocking queries from other threads.
- Added cache-line padding to event structures to reduce false sharing.
- Verified correctness with GoogleTest; achieved **530k orders/sec** (including matches) and **3.8M cancels/sec**.

Heat Equation Visualization
- Implemented 1-D heat equation solver (FTCS method) in **C++** with OpenMP parallelisation.
- Built a custom 2-D array template and interactive **Python** frontend (Link).

The Cutting Stock Problem
- Project on solving an integer optimization problem using branch-and-price algorithms.
- Used binary trees, disjoint set unions, and graphs to model and efficiently solve a large optimization problem.

Publications

Edward M. Redfern, Andrei L. Lazer, Dan Lucas
Dynamically relevant recurrent flows obtained via a nonlinear recurrence function from two-dimensional turbulence
Phys. Rev. Fluids 9, 124401 - Published 12 Dec 2024
DOI: 10.1103/PhysRevFluids.9.124401
- Publication resulting from an internship at the University of St Andrews. See Section IV for my main contributions.
- Used exploratory data analysis and feature pruning to predict a turbulent flow using its periodic orbits.
- Resulted in qualitatively and quantitatively better prediction using less data.

Skills

Programming Languages: C++, C, Python, Julia.
Special interests: Operating Systems, HPC, CUDA Programming.
Tools: Git, Perforce, Jira, Linux, QNX.
Languages: Native in English and Romanian. Advanced in French. Basic skills in Mandarin.
UK Physics Olympiad 2021: Self-taught A-Level physics content and won a gold medal.
UK Linguistics Olympiad 2022: Self-taught linguistics, won a gold medal, participated in the national team selection round.