Claudio Vestini

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Education

University of Oxford, MEng Engineering Science, Oxford, UK **Oct 2022 – Jun 2026**

- Achieved First Class Honours in all first-, second-, and third-year exams; ranked 8th in cohort of ~200 (top 4%)
- Relevant grades: Mathematics- Linear Algebra, Signal Analysis, Numerical Methods, Statistics, Probability Theory (90), Information Engineering- Estimation, Inference, Decision Theory, Discriminative/Generative Machine Learning (92)
- Keble College Scholar with three consecutive academic college scholarships endorsed by Governing Body
- Awarded several academic grants, including KCSRG (second year), EUROP and EPSRC (third year)

Princeton University, Exchange Student, Princeton (NJ), US **Aug 2025 – May 2026**

- Selected as 1 of 2 from ~30 applicants for competitive final-year exchange program

Technology

Proficient: Python (Conda, PyTorch, TensorFlow), MATLAB & Simulink, Git, Docker, LaTeX, Linux **Familiar**: C++, C

Research & Work Experience

Academic Researcher, EPSRC Vacation Internship, Oxford, UK **Jun 2025 – Sep 2025**

(Supervised by Oxford Control group professor Kostas Margellos)

- Developed a novel compression learning algorithm to synthesise control certificates with probabilistic guarantees for general non-convex problems, robustly implemented, simulated and validated in a PyTorch codebase
- Implemented scenario approach theory within established FOSSIL framework for verification of neural certificates using data-driven techniques, successfully providing tight a priori risk bounds for several certificate classes
- Reformulated the machine learning framework as a Conformal Predictor, combining statistical validity guarantees with distribution-free uncertainty quantification to provide finite-sample coverage bounds for certificate synthesis

Research Intern, Diamond Light Source, Oxfordshire, UK **Aug 2024 – Oct 2024**

(UK's National Synchrotron, supervised by the Oxford Control Group)

- Enhanced the imitation learning platform for Model Predictive Control of the synchrotron's electron beam (252 inputs, 396 outputs, 100 kHz), effectively managing high-dimensional, real-time data with a computationally efficient solution optimised for microsecond-scale execution under strict performance constraints
- Refined the formulation of Dykstra's algorithm for Hilbert space projections onto the intersection of convex sets, solving the associated stalling problem through modifications including standstill detection and exit mechanisms, reducing worst-case optimisation runtimes by upwards of 400% (academic publication in the proceedings)
- Established a modular Python implementation to benchmark against fastest available QP libraries (cvxpy, quadprog, etc.), demonstrating superior linear performance while guaranteeing reliable non-optimal projections (repository)

Founder and Chief Engineer, Oxford University Rocketry Society, Oxford, UK **Oct 2024 – Present**

(National Mach25 High-Power Rocketry competition, first participation by University of Oxford students)

- Founded the student project, facilitating the accreditation of the MEng course with the Royal Aeronautical Society; secured sponsorship and over £12k in funding from the Department of Engineering Science, RS Components, Ansys
- Administered a team of 15, promoting collaborative technical development and tight version control standards

Embedded Systems Intern, OxVent, Oxford, UK **Jul 2023 – Aug 2023**

(University startup, funded by the UK government, designing easy-to-use ventilators for COVID-19 patients)

- Developed C++ software for a high-grade, low-cost mechanical ventilator, enhancing the user interface; standardised system schematics in a comprehensive Simulink model, resulting in significant efficiency improvements
- Analysed biomedical data trends to inform commercial strategies, supporting a projected 25% profitability increase

Further Experience

International Private Tutor, Hilltop Academy, UK, US, China, Italy **Sep 2020 – Present**

- Tutored 50+ public/prep school students (Eton, Winchester, etc) for national and international competitions such as Mathematical and Physics Olympiads, effectively communicating complex problem-solving strategies to students

Skills & Interests

Languages & Immigration Status: Bilingual English and Italian, fluent Spanish. Pre-Settled Status (UK), F1 visa (US)
Interests: Aviation (pre-solo glider pilot), skiing (Keble College ski Representative), downhill mountain biking, digital photography (Sony A-7iii, DJI drones), visual art (Royal Academy young member, Courtauld friend, explored 120+ galleries worldwide), music and vinyl records, literature (favourite author: F.M. Dostoevsky), travel (visited 31 countries)