Gabriel Berk Pereira

🌐 gabrielberkpereira.com | ⃝ berkpereira | in gabriel-berk-pereira

Education

DPhil Engineering Science, University of Oxford, UK   Oct 2024–Present

Research on numerical algorithms and software for large-scale convex optimisation problems. Currently focused on factorisation-free and Krylov subspace/Anderson acceleration methods in first-order algorithms for quadratic programs. This encompasses theoretical work — e.g. convergence (rate) guarantees and justification of design of acceleration safeguards — as well as careful practical implementation (currently in Julia). Supervised by Prof. Paul Goulart.

MSc Mathematical Modelling and Scientific Computing,   Oct 2023–Sep 2024
University of Oxford, UK

Final average: Distinction (74%). Thesis "Scalable Subspace Methods for Unconstrained Optimisation" supervised by Prof. Coralia Cartis and awarded 79%.

BEng Aerospace Engineering, University of Bristol, UK   Sep 2020–Jun 2023
Final average: First Class (83%, best in cohort).

Work Experience

Tutor in Mechanical Engineering, Oxmedica (Riyadh, Saudi Arabia)   Jun 2025–Jul 2025

– Led preparation and delivery of 3-week summer programme course for two classes of 20 high-performing high school students each: curriculum setting, lesson preparation, assessment design, and lab organisation.
– Worked with undergraduate TA throughout programme for smooth course delivery.

Teaching Assistant, Engineering Science Department,   Oct 2024–Jun 2025
University of Oxford (Oxford, UK)

– Occasionally provided students with assistance during lab work for second-year undergraduate courses in control engineering.

Teaching Assistant, Mathematical Institute,   Oct 2024–Jan 2025
University of Oxford (Oxford, UK)

– Assisted the lecturer (Dr. Jaroslav Fowkes) of the third-year course "B6.3 Integer Programming" at the University of Oxford's Mathematical Institute.
– Provided written feedback on problem sheets submitted individually by 12 students every 2 weeks during term.
– Demonstrated and explained the solution to 1 problem per sheet, on the board for undergraduate class.

Technology Consulting Intern, PwC LLP (Belfast, UK)   Jul 2023–Aug 2023

– Using Python, kickstarted procedural data generation technique for proof-of-concept machine learning model training for customer churn classification.
– Secured graduate return offer.

Retail & Savings Technology Intern, M&G plc (Edinburgh, UK)   Jun 2022–Aug 2022

– Conducted qualitative research to reach recommendations on how to best generate leads for the firm's financial advice business.
– Secured graduate return offer.

Awards

Oxford–Ashton Memorial Graduate Scholarship (University of Oxford, UK) Jun 2024

Awarded yearly, covering DPhil tuition and living costs in full for 3.5 years. Funded jointly by the Department of Engineering Science and University College, Oxford.

Head of Department Prize (University of Bristol, UK) Aug 2023

Awarded to the top final-year student in the BEng Aerospace Engineering programme.

Roderick Collar Prize (University of Bristol, UK) Dec 2022

Awarded to a second-year Aerospace Engineering student—out of cohort of 155—who "demonstrated academic excellence with other activities".

Top Graduate Prize (Guimarães Martins Sarmento School, Portugal) Nov 2020

Awarded yearly to the school's graduate with the best academic results throughout secondary school.

Programming Skills

Python
- Developed novel "hybrid subspace" methods for nonconvex optimisation as part of MSc research.
- Implemented tabular reinforcement learning algorithms based on dynamic programming and Monte Carlo methods for undergraduate research project.

Julia
- Built high-performance, novel acceleration methods for first-order algorithms in convex quadratic cone problems as part of DPhil research.