# Dr. Nikolaus Vertovec

JUNIOR RESEARCH FELLOW · ST HUGH'S COLLEGE

*Department of Computer Science, University of Oxford*

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## Education

**University of Oxford**                                                                        *Oxford, United Kingdom*
DPHIL ENGINEERING SCIENCE                                                                              *2020 - 2024*

- Supervisors: Prof. Kostas Margellos & Prof. Sina Ober-Blöbaum
  Thesis: Optimal Control for Safety-Critical Systems

**ETH Zurich**                                                                                    *Zurich, Switzerland*
BACHELOR OF SCIENCE ETH IN ELECTRICAL ENGINEERING AND INFORMATION TECHNOLOGY                           *2016 - 2019*

**Georg Christoph Lichtenberg Gesamtschule**                                                        *Göttingen, Germany*
ABITUR 1.0 (HIGHEST GRADE IN COHORT)                                                                   *2007 - 2016*

## Professional Experience

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| 2024 - present | **Career Development Fellow in Artificial Intelligence** | St Hugh's College, Oxford |
| 2020 – 2021 | **Environmental Justice Campaign Organizer** | NooWorld, Los Angeles |
| 2019 – 2020 | **Intern (Surface Simulator, Mars Perseverance Rover)** | NASA Jet Propulsion Laboratory, Pasadena |
| 2018 – 2019 | **Control Engineer** | Swiss Academic Spaceflight Initiative, Zurich |
| 2016 - 2016 | **Intern (computer vision/indoor drone navigation)** | Debuggable Limited, Berlin |
| 2015 - 2016 | **Research Assistant** | Institute for Computer Science, University of Göttingen |

## Teaching Experience

**Department of Engineering Science, University of Oxford**

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| 2024-present | **Continuous Maths** |
| 2024 | **Modern Control Systems** |
| 2022-present | **Introduction to Control Theory** |
| 2024-present | **Engineering in Society** |

**Department of Engineering Science, University of Oxford**

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| 2022-2024 | **Introduction to Computing** |
| 2022-2023 | **Control Lab** |
| 2022-2023 | **Linear and Optimal Control** |

**Department of Mathematics, ETH Zurich**

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| 2019 | **Numerical Methods** |

**Department of Mathematics, ETH Zurich**

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| 2018 | **Digital Circuits Lab** |

## Awards & Grants

## Publications

Jacques Cloete, Nikolaus Vertovec, Alessandro Abate (2025). SPoRt - Safe Policy Ratio: Certified Training and Deployment of Task Policies in Model-Free RL. IJCAI 2025 (under review)

Nikolaus Vertovec, Kostas Margellos, Maria Prandini (2024). Finite sample learning of moving targets. In Automatica (under review)

Nikolaus Vertovec (2024). Optimal control for safety-critical systems. PhD Thesis

Nikolaus Vertovec, Sina Ober-Blöbaum, Kostas Margellos (2024). Safety-Aware Hybrid Control of Airborne Wind Energy Systems. In Journal of Guidance, Control, and Dynamics, vol. 47, no. 2, pp. 326–338.

Nikolaus Vertovec, Kostas Margellos (2023). State Aggregation for Distributed Value Iteration in Dynamic Programming. In IEEE Control Systems Letters, vol. 7, pp. 2269–2274.

Nikolaus Vertovec, Kostas Margellos (2022). Multi-objective low-thrust spacecraft trajectory design using reachability analysis. In European Journal of Control, vol. 69, p. 100758.

Nikolaus Vertovec, Sina Ober-Blöbaum, Kostas Margellos (2022). Verification of safety critical control policies using kernel methods. In 2022 European Control Conference (ECC), London, United Kingdom, pp. 1870-1875.

Nikolaus Vertovec, Sina Ober-Blöbaum, Kostas Margellos (2021). Multi-objective minimum time optimal control for low-thrust trajectory design. In 2021 European Control Conference (ECC), Delft, Netherlands, pp. 1975-1980.

## Peer Review

CONFERENCES REVIEWS:
International Symposium on AI Verification (SAIV)
Conference on Decision and Control (CDC)
American Control Conference (ACC)
Learning for Dynamics & Control Conference (L4DC)
Airborne Wind Energy Conference (AWEC)
European Control Conference (ECC)
International Symposium on Mathematical Theory of Networks and Systems (MTNS)

JOURNAL REVIEWER
Automatica
IEEE Transactions on Control Systems Technology (TCST)
IEEE Transactions on Cybernetics
IEEE Control Systems Letters (L-CSS)
European Journal of Operational Research
Wind Energy Science

COMMITTEE ROLES AND SESSION ORGANIZER:
Conference on Hybrid Systems: Computation and Control (HSCC), poster committee
Conference on Decision and Control (CDC), Invited Session organizer on "Safe planning and control with uncertainty quantification"