

# Dr. Nikolaus Vertovec

POSTDOCTORAL RESEARCHER · DEPARTMENT OF COMPUTER SCIENCE

St Hugh's College, University of Oxford

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**Born:** June 9<sup>th</sup>, 1997 | **Nationality:** British, German, American | **Marital Status:** Civil Partnership

## Education

### University of Oxford

Oxford, United Kingdom

DPHIL ENGINEERING SCIENCE

2020 - 2024

- Supervisors: Prof. Kostas Margellos & Prof. Sina Ober-Blobaum
- 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

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 - Software Engineering**

Institute for Computer Science, University of Göttingen

## Grants and Fellowships

2023-2026 **Career Development Fellowship in Artificial Intelligence (£200,000)**, St Hugh's College, University of Oxford — 3-year research fellowship supporting independent research (2023-2026)

2024 **Fellows' Discretionary Research Fund**, St Hugh's College, University of Oxford — Competitive internal funding supporting research

2021-2022 **Graduate Study Support Fund**, Keble College, University of Oxford — Competitive internal funding for graduate student research

## Publications

F. B. Mathiesen\*, N. Vertovec\*, F. Fabiano, L. Laurenti, A. Abate (2025). Certified Neural Approximations of Nonlinear Dynamics, 39th Conference on Neural Information Processing Systems (NeurIPS 2025) (under review)

P. Solanki\*, N. Vertovec\*, Y. Schnitzer, J. Van Beers, C. de Visser, A. Abate (2025). Certified Approximate Reachability (CARE): Formal Error Bounds on Deep Learning of Reachable Sets. 2025 IEEE 64th Conference on Decision and Control (CDC), Rio de Janeiro, Brazil, 2025 (accepted)

J. Cloete, N. Vertovec, A. Abate (2025). SPoRT - Safe Policy Ratio: Certified Training and Deployment of Task Policies in Model-Free RL. International Joint Conference on Artificial Intelligence (IJCAI) 2025 (accepted)

N. Vertovec, K. Margellos, M. Prandini (2024). Finite sample learning of moving targets. In Automatica (second round of review)

- T. Heil, F. Meissner, N. Vertovec (2025). Techno-material entanglements and the social organisation of difference. In *Ethnic and Racial Studies*, vol. 48, no 9. pp. 1859–1875.
- N. Vertovec (2024). Optimal control for safety-critical systems. PhD Thesis
- N. Vertovec, S. Ober-Blöbaum, K. 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.
- N. Vertovec, K. Margellos (2023). State Aggregation for Distributed Value Iteration in Dynamic Programming. In *IEEE Control Systems Letters*, vol. 7, pp. 2269–2274.
- N. Vertovec, K. Margellos (2022). Multi-objective low-thrust spacecraft trajectory design using reachability analysis. In *European Journal of Control*, vol. 69, p. 100758.
- N. Vertovec, Sina Ober-Blöbaum, K. Margellos (2022). Verification of safety critical control policies using kernel methods. In *2022 European Control Conference (ECC)*, London, United Kingdom, pp. 1870-1875.
- N. Vertovec, S. Ober-Blöbaum, K. Margellos (2021). Multi-objective minimum time optimal control for low-thrust trajectory design. In *2021 European Control Conference (ECC)*, Delft, Netherlands, pp. 1975-1980.

## Teaching Experience

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### Dept. of Computer Science, University of Oxford

2024-present	Continuous Maths
2024	Modern Control Systems

### Dept. of Engineering Science, University of Oxford

2024-present	Engineering in Society
2022-present	Introduction to Control Theory
2022-2024	Introduction to Computing
2022-2023	Control Lab
2022-2023	Linear and Optimal Control

### Dept. of Mathematics, ETH Zurich

2019	Numerical Methods
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### Dept. of Electrical Engineering, ETH Zurich

2018	Digital Circuits Lab
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## Peer Review

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### 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)

### 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"