Dr. Nikolaus Vertovec

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Born: June 9th, 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-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

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

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. Conference on Decision and Control (CDC) 2025 (under review)

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.

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)

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”

Teaching Experience

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**

Dept. of Electrical Engineering, ETH Zurich

2018 **Digital Circuits Lab**

Awards & Grants

Awards

2019 **2nd place Category, 4th overall winner in a field of 120 international teams**, Spaceport America Cup
2016 **”Jugend Forscht” (youth science), 2nd place**, German Engineering Association
2014 **”Jugendmusiziert” (youth music), regional 1st prize, state 2nd prize (Saxophone)**,

Grants

2024 **Fellows’ Discretionary Research Fund**, St Hugh’s College, Oxford
2022 **Graduate Study Support Fund**, Keble College, Oxford
2021 **Graduate Study Support Fund**, Keble College, Oxford