

Dr. Nikolaus Vertovec

JUNIOR RESEARCH FELLOW · ST HUGH'S COLLEGE

Department of Computer Science, University of Oxford

☎ +44 7547868711 | ✉ nikolaus.vertovec@st-hughs.ox.ac.uk | 🏠 vertovec.info | 📺 nikover | 📺 nikolaus-vertovec

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-Blobbaum
- 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**

Institute for Computer Science, University of Göttingen

Teaching Experience

Department of Engineering Science, University of Oxford

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

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

Department of Mathematics, ETH Zurich

2019	Numerical Methods
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Department of Mathematics, ETH Zurich

2018	Digital Circuits Lab
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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

- 2022 **Graduate Study Support Fund**, Keble College, Oxford
- 2021 **Graduate Study Support Fund**, Keble College, Oxford

Publications

- Prashant Solanki*, Nikolaus Vertovec*, Yannik Schnitzer, Jasper Van Beers, Coen de Visser, Alessandro Abate (2025). Certified Approximate Reachability (CARE): Formal Error Bounds on Deep Learning of Reachable Sets. Conference on Decision and Control (CDC) 2025 (under review)
- Jacques Cloete, Nikolaus Vertovec, Alessandro 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 (under review)
- Nikolaus Vertovec, Kostas Margellos, Maria Prandini (2024). Finite sample learning of moving targets. In Automatica (under review)
- Tilmann Heil, Fran Meissner, Nikolaus Vertovec (2025). Techno-material entanglements and the social organisation of difference. In Ethnic and Racial Studies, pp. 1–17.
- 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"