

# Nikolaus Vertovec

DOCOTRAL CANDIDATE · ENGINEERING SCIENCE

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## Education

### University of Oxford

DPHIL ENGINEERING SCIENCE

- Supervisor: Prof. Kostas Margellos
- Supervisor: Prof. Sina Ober-Blöbaum

Oxford, United Kingdom

2020 - present

### ETH Zurich

BACHELOR OF SCIENCE ETH IN ELECTRICAL ENGINEERING AND INFORMATION TECHNOLOGY

Zurich, Switzerland

2016 - 2019

### Georg Christoph Lichtenberg Gesamtschule

ABITUR 1.0 (HIGHEST GRADE IN COHORT)

Göttingen, Germany

2007 - 2016

## Professional Experience

Mar 2020 – Dec 2021 **Environmental Justice Campaign Organizer**

NooWorld, Los Angeles

Oct 2019 – Apr 2020 **Intern (project on the Surface Simulator for Mars 2020 Perseverance Rover)**

NASA Jet Propulsion Laboratory, California Institute of Technology, Pasadena

Sep 2018 – Jun 2019 **Control Engineer**

Swiss Academic Spaceflight Initiative, Zurich

Jun 2016 - Aug 2016 **Intern (project on a local positioning system for UAVs)**

Debuggable Limited, Berlin

Sep 2015 - Jun 2016 **Research Assistant**

Institute for Computer Science, University of Göttingen

## Teaching Experience

Academic Year **P5 Introduction to Computing**, Teaching Assistant  
2022/23

Department of Engineering Science, University of Oxford

Academic Year **B15 Control Systems**, Teaching Assistant  
2022/2023

Department of Engineering Science, University of Oxford

Academic Year **A2 Introduction to Control Theory**, Teaching Assistant  
2022/2023

Somerville College, University of Oxford

Spring 2022 **LEGO Football Control Lab**, Teaching Assistant

Department of Engineering Science, University of Oxford

Spring 2019 **Numerical Methods**, Teaching Assistant

Department of Mathematics, ETH Zurich

Fall 2018 **Digital Circuits Lab**, Teaching Assistant

Institute for Electrical Engineering, ETH Zurich

## Publications

### PUBLISHED

**Nikolaus Vertovec**, Sina Ober-Blöbaum, Kostas Margellos. “Multi-objective low-thrust spacecraft trajectory design using reachability analysis”. In: European Journal of Control (2022). issn: 09473580. doi: 10.1016/j.ejcon.2022.100758.

**Nikolaus Vertovec**, Sina Ober-Blöbaum, and Kostas Margellos. “Verification of safety critical control policies using kernel methods”. In: 2022 European Control Conference (ECC). 2022, pp. 1870–1875. doi: 10.23919/ECC55457.2022.9838224.5.

**Nikolaus Vertovec**, Sina Ober-Blöbaum, Kostas Margellos. “Multi-objective minimum time optimal control for low-thrust trajectory design”. In: 2021 European Control Conference (ECC). 2021, pp. 1975–1980. doi: 10.23919/ECC54610.2021.9654919.

## UNDER REVIEW

**Nikolaus Vertovec**, Kostas Margellos (2023). State Aggregation for Distributed Value Iteration in Dynamic Programming.

**Nikolaus Vertovec**, Sina Ober-Blöbaum, Kostas Margellos (2022). Safety-Aware Hybrid Control of Airborne Wind Energy Systems.

## Awards, & Grants

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### AWARDS

2019 **2nd place in the 10k ft Category (ETH University team), 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

## Presentations

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**Nikolaus Vertovec**, Kostas Margellos (2023). Guaranteeing safety in airborne wind energy systems, Wind Energy Science Conference (WESC2023), Glasgow, Scotland

**Nikolaus Vertovec**, Kostas Margellos (2023). State Aggregation for Distributed Value Iteration in Dynamic Programming. Numerical Mathematics and Control Seminar, University of Paderborn, Paderborn, Germany

**Nikolaus Vertovec**, Sina Ober-Blöbaum, Kostas Margellos (2022). Verification of safety critical control policies using kernel methods. 2022 European Control Conference (ECC 22), London, United Kingdom

**Nikolaus Vertovec**, Sina Ober-Blöbaum, Kostas Margellos (2022). Safety-Critical Hybrid Control of Airborne Wind Energy Systems, Airborne Wind Energy Conference (AWEC 2021), Milan, Italy

**Nikolaus Vertovec**, Sina Ober-Blöbaum, Kostas Margellos (2021). Multi-objective minimum time optimal control for low-thrust trajectory design. 2021 European Control Conference (ECC 21), Rotterdam, Netherlands

## Mentoring

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### Undergraduate Student, University of Oxford

KEISUKE SANO

2021-2022

## Outreach & Professional Development

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### PEER REVIEW

Automatica

IEEE Transactions on Control Systems Technology (TCST)

IEEE Control Systems Letters (L-CSS)

Wind Energy Science

American Control Conference (ACC)

Learning for Dynamics & Control Conference (L4DC)

International Symposium on Mathematical Theory of Networks and Systems (MTNS)

Airborne Wind Energy Conference (AWEC)

European Control Conference (ECC)