Alexander Brundiers

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Research Interests

Computer Networks & Systems; Traffic Engineering; Segment Routing; Network Planning & Design; Green Networking; Conceptualization & Implementation of (Network) Optimization Algorithms

Education

- **PhD, Computer Science** (*summa cum laude*) — Jan. 2021 – Nov. 2024
  Osnabrück University — Osnabrück, Germany
  Thesis: *"Taking the Shortcut – Enhancing Backbone Network Traffic Engineering with Segment Routing Midpoint Optimization"*
  Advisor: Prof. Dr. Nils Aschenbruck
- **MSc, Computer Science** (*with distinction*) — Nov. 2018 – Nov. 2020
  Osnabrück University — Osnabrück, Germany
  Thesis: *"Extending and Evaluating a Segment Routing based Framework for Midpoint Traffic Engineering"*
  Advisor: Prof. Dr. Nils Aschenbruck, Dr. Timmy Schüller
- **BSc, Computer Science** (*with distinction*) — Oct. 2015 – Nov. 2018
  Osnabrück University — Osnabrück, Germany
  Thesis: *"Implementation eines Frameworks zur Erzeugung und Evaluation von Traffic Dispersion Graphs"*
  Advisor: Prof. Dr. Nils Aschenbruck

Research & Work Experience

- **Deutsche Telekom Technik GmbH** — Feb. 2025 – Present
  System Engineer (full-time employment) — Münster, Germany
  Responsibilities: Conceptualization, implementation, and deployment of next-gen traffic engineering strategies for a global ISP backbone
- **Osnabrück University** — Feb. 2025 – Present
  Visiting Researcher — Osnabrück, Germany
  Research Topic: Green Traffic Engineering; Network Planning and Design
  Advisor: Prof. Dr. Nils Aschenbruck
- **Osnabrück University** — Jan. 2021 – Jan. 2025
  Research Assistant (full-time employment) — Osnabrück, Germany
  Research Topic: Segment Routing-based Network Traffic Engineering
  Advisor: Prof. Dr. Nils Aschenbruck
- **Deutsche Telekom Technik GmbH** — May 2020 – Oct. 2020
  Internship and Master's Thesis — Münster, Germany
  Topic: Network Traffic Engineering
  Advisor: Dr. Timmy Schüller

Honors & Awards

- RACI Travel Grant for RIPE 90, 2025
- GI/ITG KuVS Dissertation Award, 2024
- Nominee for GI Dissertation Award, 2024

- IEEE LCN Best Paper Award Candidate (Top 4), 2023
- RACI Travel Grant for RIPE 86, 2023
- GI/ITG KuVS Master's Thesis Award, 2021
- Lower Saxony Scholarship, 2020
- Rosen Award (for my bachelor's thesis), 2019

Publications

Hint: Preprints of most of my papers are generally freely available on my website.

Journal Articles

J3. *"Mind the Paths You Choose: Speeding up Segment Routing-based Traffic Engineering with Path Preprocessing"*
A. Brundiers, T. Schüller, N. Aschenbruck
Computer Communications, 2025.

J2. *"Fast Reoptimization with only a few Changes: Enhancing Tactical Traffic Engineering with Segment Routing Midpoint Optimization"*
A. Brundiers, T. Schüller, N. Aschenbruck
IEEE JSAC, 2025.

J1. *"An Extended Look at Midpoint Optimization for Segment Routing"*
A. Brundiers, T. Schüller, N. Aschenbruck
IEEE OJCOMS, 2024.

Conference Papers

C9. *"Power-Napping Networks: Towards Practically Usable Green Segment Routing for ISP Backbones"*
D. Otten, A. Brundiers, L. Brüggemann, N. Aschenbruck
CNSM, 2025.

C8. *"TROPIC: Traffic-Engineering-Oriented Planning of IP Core Networks"*
L. Richardt, A. Brundiers, T. Schüller, N. Aschenbruck
IFIP Networking, 2025.

C7. *"Live Long and Prosper – On the Potential of Segment Routing Midpoint Optimization to Improve Network Robustness"*
A. Brundiers, T. Schüller, N. Aschenbruck
IEEE LCN, 2024.

C6. *"Preprocess your Paths – Speeding up Linear Programming-based Optimization for Segment Routing Traffic Engineering"*
A. Brundiers, T. Schüller, N. Aschenbruck
IFIP Networking, 2024. **Invited for Journal Extension**

C5. *"Combining Midpoint Optimization and Conventional End-To-End Segment Routing for Traffic Engineering"*
A. Brundiers, T. Schüller, N. Aschenbruck
IEEE LCN, 2023. **Best Paper Award Candidate**

C4. *"Green Segment Routing for Improved Sustainability of Backbone Networks"*
D. Otten, A. Brundiers, T. Schüller, N. Aschenbruck
IEEE LCN, 2023.

C3. *"Tactical Traffic Engineering with Segment Routing Midpoint Optimization"*
A. Brundiers, T. Schüller, N. Aschenbruck
IFIP Networking, 2023.

C2. *"Midpoint Optimization for Segment Routing"*
A. Brundiers, T. Schüller, N. Aschenbruck
IEEE INFOCOM, 2022.

C1. *"On the Benefits of Loops for Segment Routing Traffic Engineering"*
A. Brundiers, T. Schüller, N. Aschenbruck
IEEE LCN, 2021.

Miscellaneous (Not peer-reviewed)

M2. *"Verbesserung von Traffic Engineering für Backbone Netzwerke durch Segment Routing Midpoint Optimization"*, Alexander Brundiers, GI Ausgezeichnete Informatikdissertationen 2024, LNI D-25, 2025.

M1. *"Best Thesis Abstract: Taking the Shortcut – Enhancing Backbone Network Traffic Engineering with Segment Routing Midpoint Optimization"*, Alexander Brundiers, NetSys, 2025.

Teaching Experience

- **Robust Networked Systems** — Osnabrück University
  Teaching Assistant — Fall 2023/24, Fall 2024/25
- **Internet Measurements** — Osnabrück University
  Teaching Assistant — Spring 2022, Spring 2023, Spring 2024
- **IT & Network Security** — Osnabrück University
  Teaching Assistant — Fall 2021/22
- **Computer Networks** — Osnabrück University
  Teaching Assistant — Spring 2021

Supervised Student Theses

Theses that led to a peer-reviewed publication are marked with a ★.

- **Leon Richardt** — Osnabrück University
  MSc, Computer Science — 2024
  Design and Evaluation of an Algorithm for Segment-Routing-Tailored Capacity Upgrades ★
- **Bennet Janzen** — Osnabrück University
  BSc, Computer Science — 2022/23
  Evaluation von Green Traffic Engineering Algorithmen unter Einbeziehung von Netzwerkresilienz-Aspekten

Service

- IEEE INFOCOM, 2026
  External Expert Reviewer
- ACM Transactions on Internet Technology, 2025
  Reviewer

Presentations & Invited Talks

- KuVS NetSys, September 2025, Ilmenau, Germany (Award Talk)
- Dagstuhl Seminar (GI Dissertation Award), May 2025, Dagstuhl, Germany (Academia)
- RIPE 90, May 2025, Lisbon, Portugal (Industry)
- KuVS FG NetSoft, April 2025, virtual (Academia)
- Deutsche Telekom Technik GmbH, March 2025, Münster, Germany (Industry)
- IEEE LCN, October 2024, Caen, France (Conference)
- IFIP Networking, June 2024, Thessaloniki, Greece (Conference)
- University of Zurich, February 2024, Zurich, Switzerland (Academia)
- IEEE LCN, October 2023, Daytona Beach, FL, USA (Conference)
- KuVS NetSys, September 2023, Potsdam, Germany (Award Talk)
- IFIP Networking, June 2023, Barcelona, Spain (Conference)
- RIPE 86, May 2023, Rotterdam, Netherlands (Industry)
- Deutsche Telekom Technik GmbH, May 2023, Münster, Germany (Industry)
- IEEE INFOCOM, May 2022, virtual (Conference)
- IEEE LCN, October 2021, virtual (Conference)

Technical Skills

- **Programming languages:** C, C++, Python, Bash
- **Tools & Frameworks:** CPLEX

Languages

- **German:** Native
- **English:** Fluent

Last updated: December 5, 2025