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Google Scholar

Hendrik Cech

Doctoral researcher specializing in transport protocol design (QUIC, Multipath QUIC) and satellite network measurement. First-author publications at **SIGCOMM** and **ANRW**, and recipient of the **IRTF Applied Networking Research Prize**. Experienced in systems programming (Rust, Go, Python) and cloud infrastructure (AWS, Azure).

Education

- 2023 – Present **Doctoral Researcher**, *Technical University of Munich*
- Working title: *Next-Generation Transport Protocols for Next-Generation Applications*.
 - Advised by Prof. Dr.-Ing. Jörg Ott (TUM) and co-advised by Prof. Nitinder Mohan (SPEAR Lab, TU Delft).
 - Core research includes extensive measurement studies of the Starlink LEO satellite network and designing novel Multipath QUIC scheduling interfaces.
- 2018–2021 **Computer Science – Informatics (M.Sc.)**, *Technical University of Munich*, 3.8/4.0 GPA (German grade: 1.2)
- Thesis: *Evaluating Transport Protocols for Remote Piloting of Aerial Vehicles*
Investigated the feasibility of low-latency, high-quality UAV video delivery over commercial LTE networks. Built and evaluated an adaptive bitrate transmission pipeline using GCC and SCReAM, culminating in a **publication at IMC '22**.
- 2014–2018 **Computer Science – Software Systems Science (B.Sc.)**, *University of Bamberg*, 3.6/4.0 GPA (German grade: 1.4)
- Thesis: *Evaluation of Blockchain Technology for Internet-of-Things Applications*
Prototyped blockchain-based IoT data exchange on a Raspberry Pi cluster using MultiChain; **published at CN '19**.

Work Experience

- Sep 2021 – **Research Associate**, *Technical University of Munich*
- Present
- **Project Leadership:** Led the “Security and Network Management” work package for the BMDV-funded 5G-COMPASS project, coordinating with several partners to develop a 5G-integrated indoor RAN for the Industrial IoT.
 - **Network Engineering:** Architected and developed robust multipath mechanisms for 5G-COMPASS, ensuring highly reliable end-to-end data delivery for real-time applications across alternative network paths.
 - **Teaching & Mentoring:** Mentored multiple Bachelor’s and Master’s theses, led multiple iterations of the *Wireless Internet Communication* seminar, and designed and instructed hands-on network engineering labs for the Master-level *Protocol Design* course.

- Apr – Sep 2018 **Software Engineering Intern**, *Exasol (Big Data Analytics)*, Nuremberg
- Architected and implemented automated testing infrastructure using AWS and Azure APIs to accelerate software validation processes.
 - Developed and maintained backend testing utilities and data processing components utilizing Java, C++, Python, Bash, and SQL.
- 2015–2018 **Teaching Assistant**, *University of Bamberg*
Instructed practical labs for advanced CS modules (Java, parallel programming); provided technical mentorship and code reviews.
- Jun – Sep 2016 **Research Intern**, *University of British Columbia*, Vancouver, Canada
- Co-developed DInv, an automated verification tool for distributed systems written in Go, contributing directly to a **publication at ICSE '18**.
 - Applied formal methods and dynamic analysis techniques to extract and verify state invariants across distributed network environments.

Honors & Awards

- 2025 **IRTF Applied Networking Research Prize (ANRP)**, *Internet Research Task Force*
Awarded at IETF-123 for contributions to Starlink performance measurement research (WWW '24).
- 2016–2020 **Max Weber-Program**, *Elite Network of Bavaria*
Highly competitive scholarship by the Free State of Bavaria offering financial aid, soft-skills training, and a strong professional network.
- 2016 **DAAD Scholarship**, *German Academic Exchange Service*
DAAD RISE Worldwide Scholarship awarded to fund a summer research internship at the University of British Columbia. Provided financial support for travel and living expenses.

Professional Skills

Programming	Python, Rust, Go, Bash, SQL
Systems	Linux kernel networking, eBPF, low-level socket programming
Networking	QUIC, TCP/IP, Wireshark, Network Measurement
Cloud & Tools	AWS, Azure, Docker, Linux/Unix, Git
Languages	German (Native), English (Fluent), Spanish (Basic)

Publications

- 2026 Hendrik Cech, Patrick Bokelmann, and Nitinder Mohan. "Tokens, Not Packets: Rethinking the Multipath QUIC Scheduling Interface". In: *Proceedings of the 2026 Applied Networking Research Workshop*. July 2026, pp. 140–146. DOI: 10.1145/3822163.3827925.
- 2026 Hendrik Cech, Nitinder Mohan, and Jörg Ott. "Dissecting the StarLink: Characterizing Queuing and Flow Dynamics in the Starlink Network". In: *Proceedings of the ACM SIGCOMM 2026 Conference*. SIGCOMM '26. 2026. DOI: 10.1145/3789240.3829162.
- 2024 Nitinder Mohan, Andrew E. Ferguson, Hendrik Cech, Rohan Bose, Prakita Rayyan Renatin, Mahesh K. Marina, and Jörg Ott. "A Multifaceted Look at Starlink Per-

- formance". In: *Proceedings of the ACM Web Conference 2024*. WWW '24. 2024, pp. 2723–2734. DOI: 10.1145/3589334.3645328.
- 2022 Aygün Baltacı, Hendrik Cech, Nitinder Mohan, Fabian Geyer, Vaibhav Bajpai, Jörg Ott, and Dominic Schupke. "Analyzing Real-time Video Delivery over Cellular Networks for Remote Piloting Aerial Vehicles". In: *Proceedings of the 22nd ACM Internet Measurement Conference*. IMC '22. 2022. DOI: 10.1145/3517745.3561465.
- 2022 Mike Kosek, Hendrik Cech, Vaibhav Bajpai, and Jörg Ott. "Exploring Proxying QUIC and HTTP/3 for Satellite Communication". In: *2022 IFIP Networking Conference (IFIP Networking)*. 2022, pp. 1–9. DOI: 10.23919/IFIPNetworking55013.2022.9829773.
- 2019 Hendrik L. Cech, Marcel Grossmann, and Udo R. Krieger. "A Fog Computing Architecture to Share Sensor Data by Means of Blockchain Functionality". In: *2019 IEEE International Conference on Fog Computing (ICFC)*. June 2019. DOI: 10.1109/icfc.2019.00013.
- 2019 Udo R. Krieger, Michael H. Ziegler, and Hendrik L. Cech. "Performance Modeling of the Consensus Mechanism in a Permissioned Blockchain". In: *Computer Networks*. 2019, pp. 3–17. DOI: 10.1007/978-3-030-21952-9_1.
- 2018 Stewart Grant, Hendrik Cech, and Ivan Beschastnikh. "Inferring and asserting distributed system invariants". In: *Proceedings of the 40th International Conference on Software Engineering*. May 2018. DOI: 10.1145/3180155.3180199.