

Zoltán Szatmár

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Education

- Feb 2026–Present **Computer Science Engineering MSc** – Budapest University of Technology and Economics
- Major: IT Security; Minor: Critical Systems
- Sep 2022–Jan 2026 **Computer Science Engineering BSc** – Budapest University of Technology and Economics
- GPA: 4.99 / 5.0 (*excellent with highest honours*); Specialization: Intelligent Networks
 - BSc Thesis: “Enhancing Media over QUIC Resiliency with Adaptive Subscriber-Side Fast and Implicit Failover Methods”
 - Member of the IMSc talent management program for highly motivated students.
 - Ranked among the **top 5** of **718** students in my cohort for **3** years.
 - Participated in ACM ICPC **CERC 2023**.
- Sep–Dec 2025 **Exchange Semester** – Aalto University
- GPA: 5.0 / 5.0; Focusing on containerization, cloud, 4G/5G, network security.

Research Experience

- Jun 2024–Present **Research Assistant** – Budapest University of Technology and Economics
- *Low Latency, Low Loss, Scalable Throughput (L4S) for QUIC*
 - Implemented a Prague-compliant congestion control algorithm for Quinn in Rust.
 - Kept contact with researchers from **Nokia Bell Labs** and FOSS communities.
 - *Media over QUIC Resilience*
 - Reduced live media outages by 96% (lost frames) through implicit failover methods.
 - Designed and implemented fast failover logic into Media over QUIC (MoQ) in Rust.
 - Published a short paper at the **ACM SIGCOMM EMS’25 Workshop**.
 - Submitted a full-length paper to **IEEE Transactions on Multimedia**.
 - *Media over QUIC Relay Topology Optimization*
 - Proposed methods showing reductions of up to 67% in data transmitted over Media over QUIC (MoQ) networks by optimizing the network topology of MoQ relays.
 - Integrated media routing into the `moq-rs` implementation of MoQ in Rust.
 - Created an optimal ILP and an efficient heuristic media routing algorithm in Python.
 - Submitted a full-length paper to the **Infocommunications Journal**.

Teaching Experience

- Sep 2023–May 2026 **Teaching Assistant** – Budapest University of Technology and Economics
- Mentored **100+** students across **6** core Computer Engineering courses: C Programming, Computer Architectures, Operating Systems, Software Engineering, Communication Networks, Information Systems Management.
 - Led hands-on laboratory and exercise sessions.
 - Assisted with exam supervision, evaluation, and homework grading.

Industry Experience

- Jun–Aug 2025 **Student Developer** – Ericsson Hungary
- Worked on network software components for microwave communication systems, improving reliability and configuration safety. Optimized internal tooling to reduce bug report processing time, and contributed features and stability fixes in C++.

May–Aug 2024	DevOps Engineer – 360 Health Technologies Maintained and automated cloud infrastructure for containerized deployments. Reduced deployment time through Infrastructure as Code solutions, developed backup and recovery mechanisms, and improved internal service connectivity.
Jul–Sep 2022	Software Engineer Intern – NISZ National Infocommunications Services Company Developed frontend prototypes for a WebRTC-based videoconferencing platform using JavaScript and React.

Scholarships & Awards

Nov 2025	Scientific Students’ Associations Award <i>Budapest University of Technology and Economics</i> My work “Enhancing Media over QUIC Resiliency Using Implicit Failover” won 1st place and the Tibor Trón’s Award at the Scientific Students’ Associations Conference (8 entries).
Sep 2025, Sep 2026	National Higher Education Scholarship <i>National Research, Development and Innovation Office</i> Awarded to the top 0.8% of students with outstanding academic and professional achievements for each academic year by the Minister of Culture and Innovation.
Mar 2025, Mar 2026	Ericsson TMIT TopN Scholarship <i>Ericsson Hungary & BME Department of Telecommunications and Artificial Intelligence</i> Annually awarded to top student researchers working on topics related to AI and networks.
Nov 2024	National Scientific Students’ Associations Award <i>National Association for Student Research</i> Our work “Media over QUIC Relay Topology Optimization”, co-authored with a fellow student, won 1st place and the Dean’s Special Award at the Scientific Students’ Associations Conference (8 entries), and 1st place nationally at the National Scientific Students’ Associations Conference (9 entries).
Nov 2024, Dec 2025	Dean’s IMSc Scholarship <i>Budapest University of Technology and Economics</i> Annually awarded to the top 5 students in each grade.
Oct 2023	Morgan Stanley IMSc Scholarship <i>Budapest University of Technology and Economics</i> Annually awarded by Morgan Stanley to the top 5 students in their junior year.

Publications

- [1] **Szatmáry, Z.**, Németh, F., Pelle, I., & Lévai, T. (2026). Enhancing MoQ Resiliency with Implicit Failover Methods. *IEEE Transactions on Multimedia*. (Early Access)
- [2] **Szatmáry, Z.**, Szenczy, B., & Lévai, T. (2026). Efficient Media Routing for Media over QUIC: Balancing Cost and Latency. *INFOCOMMUNICATIONS JOURNAL*, 18(2), 2-8.
- [3] Németh, F., **Szatmáry, Z.**, Pelle, I., & Lévai, T. (2025, September). MoQ Resilience: Implicit Fast Failover. In *Proceedings of the 3rd Workshop on Emerging Multimedia Systems* (pp. 61-63).

* denotes equal contribution.

Language

Hungarian – Native, English – Fluent (TOEFL 107/120), German – Beginner, Finnish – Beginner