Atakan Topaloğlu

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Education

ETH Zürich | Zürich *September 2025 – Expected Graduation: June 2027*
MSc. in Information Technology and Electrical Engineering
IEEE Signal Processing Society Scholarship (renewed)

Koç University | Istanbul *September 2021 – June 2025*
BSc. in Electrical and Electronics Engineering, GPA: 3.99/4.00, Department Rank: 2/135
IEEE Signal Processing Society Scholarship **(first ever recipient from a Turkish University)**

Research Experience

ETH Zürich | Research Assistant, Photogrammetry & Remote Sensing Lab *September 2025 – Present*
• Recruited as RA with the start of my MSc, working on domain adaptation of a 3D point cloud foundation model to enable out-of-distribution generalization from indoor environments to forests. *(Supervisor: Prof. Konrad Schindler)*
• Optimized point cloud preprocessing by replacing repeated NumPy array scans with a single-pass approach, slashing runtime from over 8 hours to under 2 minutes.
• Resolved I/O and CPU bottlenecks causing <1% GPU/CPU utilization by preprocessing data augmentations offline with multiprocessing and migrating to HDF5 files, cutting training time from 12 days to 8 hours.

Google | Research Collaborator *March 2025 – September 2025*
• Set a new state-of-the-art on sparse-view Gaussian Splatting. We grounded generative priors with a zero-shot, MVS-based uncertainty oracle, using VGGT global attention maps to filter generative artifacts.
• Initiated and led the Google collaboration, from proposal to first author WACV 2026 acceptance.

Koç University | KUIS AI Undergraduate Researcher *October 2024 – June 2025*
• Won the 'Best Final Project' award for our work in efficient single-image-super-resolution (SISR) and published a first-co-author paper to ICIPW'25 on difficulty-aware SISR evaluation. *(Supervisor: Prof. Murat Tekalp)*

Technical University of Munich | Undergraduate Summer Researcher *July 2024 – September 2024*
• Repurposed a Meta AI audio codec to compress vibrotactile data, achieving real-time performance on a single CPU core while slightly surpassing SOTA in quality (PSNR, ST-SIM) for high compression ratios (>30x).
• Proposed and designed experiments for a novel spatial masking approach to enhance the Multi-Channel Vibrotactile Codec, later adopted by the team (*Supervisor: Prof. Eckehard Steinbach*; Erasmus+ Internship).

Work Experience

Siemens | Part-Time R&D Working Student *August 2023 – July 2025*
• Led the development of a 3D Digital Twin PoC using Gaussian Splatting, redesigning the data processing pipeline to cut memory consumption by 83%, enabling capture from smartphone cameras, eliminating need for specialized equipment.
• Developed a wavelet-based SVM classifier to identify defects in A-Scan ultrasound data for non-destructive wind turbine testing. Secured a ~$20k industrial ultrasound kit for trial at no cost, resolving a 4-month sourcing delay.
• Co-led the AI Initiative by moderating meetings with the upper management and division representatives to increase AI competence and drive novel use-cases. Centralized and communicated AI trainings, communities, and use-case libraries.
• Initiated the first inner-source code initiative in the region by developing, releasing, documenting and maintaining an interactive YAML Configuration Editor. Presented a seminar on the project to over 100 colleagues.

Koç University | Teaching Assistant February 2023 – July 2023, February 2024 – July 2024
• TA for Signals and Systems & DSP; received commendation from faculty for outstanding performance.

Skills

Programming Languages: Python, C++, Julia, MATLAB
Frameworks & Tools: PyTorch, CUDA, AWS, ONNX, Docker, COLMAP, Unity, Meshlab, CloudCompare, Omniverse
Languages (Spoken): German (Intermediate), English (Advanced, TOEFL: 119/120), Turkish (Native)