

# Roham Zendehdel Nobari



**Research interests:** Dynamic SLAM • VIO • Egocentric 3D Vision • Real2Sim for Robot Learning

M.Sc. student, UZH

Graduate Student Researcher (part-time), ETH CVG

Computer Vision Team Lead, microagi

Zurich, Switzerland

🌐 rohamzn.com

✉ rzendehdel@ethz.ch

🌐 linkedin.com/in/rohamzn

🐙 github.com/rzninvo

🎓 Google Scholar

## Education

### M.Sc. in Informatics, Major in Artificial Intelligence

University of Zurich (UZH) • ETH Zurich special student (CS) • GPA 5.5 / 6.0 overall; 5.73 / 6.0 at ETH Zurich

Feb 2024 – Present

Zurich, Switzerland

### B.Sc. in Computer Engineering

Amirkabir University of Technology (Tehran Polytechnic) • GPA 16.7 / 20 (last two years)

Sep 2018 – Oct 2023

Tehran, Iran

## Publications

### LangLoc: “Tell Me What You See”

S. K. Panwar\*, R. Zendehdel Nobari\*, S. F. Y. Lau\*, A. B. R. Shaik\*, M. Günther, M. Pollefeys, D. Barath (\*equal contribution)

ECCV 2026 main conference (poster), LNCS pp. 598–615 • doi:10.1007/978-3-032-37167-6\_34 • github.com/rzninvo/Lang-Loc

### Shrome at Touché: Soft-Vote Ensembling and Counter-Causal Augmentation for Causality Extraction

R. Zendehdel Nobari\*, S. Sooratgar\* (\*equal contribution)

CLEF 2026 Working Notes (Touché shared task; CEUR-WS), to appear • talk in Jena, Sep 2026 • Touché 2026 Award

## Research Experience

### ETH Zurich, Computer Vision and Geometry Group (CVG) • supervisor: Dr. D. Barath

Graduate Student Researcher (part-time), ETH CVG

Mar 2026 – Present

- Co-designed and built **microSLAM** with Mahbod Tajdini (two-person team): dense monocular SLAM for dynamic egocentric scenes via motion-aware tracking and instance-level mapping; targeting CVPR 2027
- With M. Tajdini, reported inflated LaMaria scores, ours included; maintainers traced them to triangulated control points left free in Sim(3) refinement and re-scored (github.com/cvg/lamaria/pull/22)
- microSLAM is **1st among monocular-only entries** on all five LaMaria challenges (three rivals are our reruns) and **3rd on Short**, behind two IMU-aided systems (Sep 2026; lamaria.ethz.ch/leaderboard)

Master Project Student, ETH CVG

Jun 2025 – Mar 2026

- Co-developed **LangLoc**, text-based localization: SceneGraphLoc-based retrieval (ScanScribe: 76.7% Top-1 of 10, +8.1 pp vs Text2SGM) and a Bayesian yes/no dialog (3RScan-100 median error 1.55 to 0.80 m)
- Built the LangLoc dataset (**13,000+** pose-indexed descriptions over **1,300+** 3RScan scans) via DPP keyframe selection and LLM prompting; wrote most of the public PyTorch code (GATv2 + CLIP encoders)

### ETH Zurich, Ecosystems and Landscape Evolution Group • supervisor: Prof. L. Pellissier

Research Assistant (part-time), ETH D-USYS

Apr 2025 – Jun 2026

- Extended the lab’s DADA2/R scripts into SeeDNAP, an open-source eDNA pipeline (316 tests)

## Experience

### microagi • egocentric data for robot learning

Computer Vision Team Lead, microagi

Aug 2026 – Present

- Co-own microSLAM with M. Tajdini: its monocular and VIO variants run in production on egocentric video
- Lead the team turning microSLAM output into robot-learning data: Gaussian splatting, mesh reconstruction for Isaac Sim, 3D object tracking, 6-DoF object pose estimation and 3D scene flow

Member of Technical Staff (part-time), microagi

Apr 2026 – Aug 2026

- Co-built microSLAM’s tightly coupled visual-inertial variant with M. Tajdini: Ceres optimization of visual and IMU residuals, loop closure via pose-graph optimization, GPU sparse solves via cuDSS

Perception Engineer (SLAM; contract), microagi

Apr 2026

- Cut drift of microagi’s monocular VIO from **29 to 1 cm/s** on the hardest test sequence, within target

**ETH Robotics Club, Humanoid Division** • team behind XALUN, Switzerland's first student-built humanoid

Robot Learning Engineer (part-time), ETH Robotics Club

Nov 2025 – Present

- Co-reconstructed the club's hangar as a mesh for real-to-sim; now building its Gaussian splatting map
- Deployed NVIDIA GEAR-SONIC whole-body teleoperation (PICO VR) on a Unitree G1 with the team, collecting demonstrations to fine-tune Isaac GR00T N1.7

## Projects

**LeMonkey: Vision-Language-Action Manipulation** 🤖 • ETH Robot Learning course, team of 5 Apr 2026 – May 2026

- Scaled 178 SO-101 teleop demos to 9.4k episodes with portrait-swap augmentation (Grounding DINO, SAM 2, ArcFace identity check) to fine-tune SmolVLA-450M for placing a Coke can on named portraits

**Landmark-Based Conversational Indoor Navigation** 🗺️ • ETH Mixed Reality course, team of 4 Sep 2025 – Dec 2025

- Built single-image 6-DoF localization (hloc on the LaMAR map of ETH's main building) and a segmented mesh for Habitat-Sim path planning in a voice-guided phone app, supervised by Microsoft Spatial AI Lab

**Vision-Based Drone Flight** 🚁 • UZH Robotics and Perception Group, 1-week seminar, team of 5 Sep 2025

- Co-built a drone detector and PPO tracking policy (Flightmare), flown sim-to-real on a quadrotor at 60 Hz

**SpotMap: 3D Perception for Spot** 🤖 • ETH Zurich, team of 4; supervisors: Z. Bauer, H. Blum Feb 2025 – Aug 2025

- Co-built an updatable open-vocabulary 3D scene graph from RGB-D (Open3D SLAC, TSDF, OpenMask3D)

**Digital Twin of Tehran Traffic Scenes** 🌐 • B.Sc. thesis, then RA; supervisor: Dr. M. Javanmardi Jan 2023 – Feb 2024

- Integrated LiDAR 3D detection (CenterPoint) with EKF tracking in a ROS 2 Autoware/AWSIM twin

## Teaching & Service

**Teaching Assistant**, Environmental Systems Data Science, ETH Zurich Sep 2024 – Jan 2025; Sep 2025 – Jun 2026

**Teaching Assistant, 4 courses incl. Head TA**, Amirkabir University of Technology Aug 2022 – Jun 2023

**Board Member, then Hack4Good Lead**, Analytics Club at ETH Aug 2024 – Aug 2026

**Vice President of Events**, European Student Robotics Association (ESRA) Mar 2026 – Jun 2026

## Awards

**Touché 2026 Award**, highest event extraction effectiveness, Causality Extraction task, CLEF 2026 Sep 2026

**3rd Place**, robinreal challenge, Datathon 2026 Apr 2026

**2nd Place**, Belimo challenge, START Hack 2026 Mar 2026

**Best dApp Implementation Award**, BCOLN course, UZH Communication Systems Group May 2024

## Skills

**SLAM & 3D Vision:** dense monocular visual SLAM, dynamic and egocentric SLAM, visual odometry, tightly coupled VIO (Ceres, cuDSS), state estimation, bundle adjustment, pose-graph optimization, loop closure, Sim(3) trajectory evaluation, visual localization (hloc), language-based localization (scene graphs), 3D reconstruction (TSDF, meshing, Gaussian splatting), 3D object detection and tracking (LiDAR point clouds, Kalman filter), open-vocabulary 3D segmentation

**Machine Learning & Robot Learning:** deep learning (PyTorch), graph neural networks (GATv2), vision foundation models (CLIP, SAM 2, Grounding DINO), LLM dataset generation, VLA data collection and augmentation for imitation learning (Isaac GR00T N1.7, SmolVLA, LeRobot), reinforcement learning (PPO)

**Robotics & Simulation:** ROS2, Unitree G1 (GEAR-SONIC, PICO VR teleoperation), Spot, SO-101, Habitat-Sim, Flightmare, Autoware/AWSIM, sim-to-real, real-to-sim

**Programming & Tools:** Python, OpenCV, Open3D, C++, CUDA, R, Linux, Docker, Git

**Languages:** English (C2), German (B1), Japanese (elementary), Persian (native)