

Roham Zendehdel Nobari



Focus: Visual & Visual-Inertial SLAM • Dynamic Scenes • 3D Vision • Real2Sim for Robot Learning

MSc student, UZH

Computer Vision Team Lead, microagi

Graduate Student Researcher (part-time), ETH CVG

Zurich, Switzerland • Swiss B permit (student)

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🐙 github.com/rzninvo

🎓 Google Scholar

Education

MSc 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

BSc in Computer Engineering

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

Sep 2018 – Oct 2023

Tehran, Iran

Experience

microagi • egocentric data for robot learning

Computer Vision Team Lead, microagi

Aug 2026 – Present

- Co-own **microSLAM** with M. Tajdini (our dynamic-scene SLAM from ETH Zurich's CVG, below): its monocular and visual-inertial variants run in production on egocentric video for robot learning
- Lead the team turning microSLAM output into robot-learning data: Gaussian splatting, meshes 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 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), then 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) with DPP keyframe selection and LLM prompting; wrote most of the PyTorch code (GATv2 + CLIP)

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
- Added ZED Mini and wrist-camera streaming (Rerun); doubled wrist-camera frame rate via a buffer fix

ETH Zurich, Ecosystems and Landscape Evolution Group

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

Apr 2025 – Jun 2026

- Extended the lab's DADA2 scripts into **SeeDNAP**, an open-source eDNA metabarcoding pipeline (316 tests)

Publications

LangLoc: “Tell Me What You See”

S. K. Panwar*, R. Zendeheel Nobari*, S. F. Y. Lau*, A. B. R. Shaik*, M. Günther, M. Pollefeys, D. Barath (*equal contribution)
ECCV 2026 main conference (poster), Springer LNCS • 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. Zendeheel Nobari*, S. Sooratgar* (*equal contribution)

CLEF 2026 Working Notes (CEUR-WS), to appear • Touché 2026 Award • granularity-adj. extraction F1 0.728 (baseline 0.665)

Projects

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

- Built identity-preserving augmentation (Grounding DINO, SAM 2, ArcFace) growing 178 SO-101 teleoperation demos to 9.4k episodes for fine-tuning SmolVLA-450M on celebrity-portrait placement

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 its segmented mesh for Habitat-Sim path planning in a voice-guided phone app (Microsoft Spatial AI Lab supervisors)

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), deployed sim-to-real on a quadrotor at 60 Hz

SpotMap: 3D Perception for Spot 📺 • ETH Zurich, team of 4 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 🌐 • BSc thesis, then research assistant, Amirkabir University Jan 2023 – Feb 2024

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

Teaching, Leadership & Activities

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

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

4th Place, Zenline challenge, Anthropic Hackathon Zurich Mar 2026

Skills

SLAM & 3D Vision: visual SLAM (dense, monocular, dynamic egocentric scenes), visual odometry (VO), tightly coupled visual-inertial odometry (VIO; Ceres, cuDSS), loop closure, pose-graph optimization, bundle adjustment, state estimation, sensor fusion, multi-view geometry, Sim(3) trajectory evaluation, 6-DoF visual localization (hloc), 3D reconstruction (TSDF, Open3D, Gaussian splatting), point clouds, 3D object detection and tracking (CenterPoint, Kalman filter), open-vocabulary 3D segmentation, scene graphs

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

Robotics & Simulation: ROS2, Unitree G1 (GEAR-SONIC, PICO VR teleoperation), Spot, SO-101, ZED Mini, LiDAR, Habitat-Sim, Flightmare, Autoware/AWSIM

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

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