



MICKYAS TAMIRU ASFAW

🏠 Robotics & AI Engineer | Robot Learning, Controls, Perception | Rouen, France

✉️ mickyastamiru92@gmail.com

🌐 [LinkedIn](https://www.linkedin.com/in/mickyas)

🐙 github.com/MickyasTA

🌐 mickyasta.github.io

Professional Summary

Robotics and AI engineer spanning reinforcement learning, computer vision, and classical control, comfortable taking a system from equations and simulation to deployed hardware. I train and evaluate deep RL policies (PPO, TD3, SAC) in physics simulators (Isaac Lab, MuJoCo, Gazebo) with sim-to-real transfer on Jetson-class platforms, build perception and 3D reconstruction pipelines (segmentation, monocular depth, 3D Gaussian Splatting, 6-DoF pose estimation), and design classical control (MPC, LQR, H_∞ , PID) as baselines and stabilizing controllers. Most recently Research and Innovation Engineer at CESI LINEACT (18-month research contract, Feb 2025 to Jul 2026), with two published peer-reviewed papers (one first-author), a journal paper under review and one more in preparation. I own the full stack: CAD, simulation, training pipelines, Docker/ROS2 deployment, and validation with automated tests and continuous integration.

Experience

CESI, LINEACT Research Laboratory

Feb 2025 – Jul 2026

Research and Innovation Engineer

Rouen, France

- Worked within the FUSION project [Link](#) (France 2030, i-Démo régionalisé call; partners Conscience Robotics, Assystem and CESI) on 3D reconstruction and 6-DoF camera pose estimation in industrial environments with radiance-field methods, and within REMOTED (PHC Balaton project 52934RC, Campus France) with ELTE University, Hungary (supported by Bosch), on a hybrid, data-efficient 3D reconstruction pipeline for sites where real data is scarce.
- Built an ArUco-anchored COLMAP rescaling pipeline that recovers metric scale for 3D Gaussian Splatting scenes (digital twin alignment of a nuclear site at Orano) and benchmarked 3D Gaussian Splatting methods on texture-less industrial environments.
- Deployed FoundationPose 6-DoF object pose estimation with SAM2/SAM3 segmentation and Depth Anything monocular depth for continuous, real-time digital twin state updates; first-author benchmark published at IntRob'26.
- Delivered an XR/VR teleoperation interface that renders the live digital twin in a VR headset, enabling remote control and mission authoring of the Ubik mobile robot.

IRT Saint Exupéry

Mar 2024 – Aug 2024

Robotics Engineer Intern

Toulouse, France

- Trained deep RL agents (DDPG, TD3, SAC) for autonomous lane following from camera input, using OpenCV lane features fused with auto-encoder latent embeddings of stacked frames. [Link](#)
- Raised task performance by 18.3% and accelerated convergence by integrating a contrastive-learning replay buffer (CLBuffer). [Link](#)
- Deployed trained policies to a physical Jetson Nano robot using domain randomization for sim-to-real transfer, packaged as Docker images with ROS2 client-server communication. [Link](#)

Heineken Brewery Share Company (HBSC)

Jul 2021 – Oct 2021

Robotics Engineer Intern

Addis Ababa, Ethiopia

- Designed a 5-axis palletizing robotic arm (SolidWorks, MATLAB Simulink, CoppeliaSim) [Link](#) and built a working Arduino-controlled prototype with a custom Android app as the HMI, executing taught trajectories. [Link](#)

Selected Projects

AETHER-1: Bipedal Hybrid Ground-Air Robot [Link](#)

2025 – Present

- Personal flagship project: trained a single from-scratch PPO policy (hand-written, no RL libraries) controlling a bipedal two-wheel base with four tilting rotors through a six-stage performance-gated curriculum, reaching a 99.5% final curriculum-gate success rate without forgetting earlier skills.
- Learned the drive-vs-fly decision from an energy-priced reward exploiting the $\sim 10\times$ drive/hover energy asymmetry; hardened for sim-to-real with 36 domain-randomization axes and a physics/training stack verified by 250 automated tests, alongside a classical MPC/LQR/PID baseline. [Link](#)

Open-Source Wheeled Quadruped: Isaac Lab RL, Sim-to-Sim Validated [Link](#)

Feb 2025 – Present

- Open-sourced a Segway-style wheeled quadruped that learns to balance and drive with PPO in NVIDIA Isaac Lab (2048 GPU-parallel environments; custom Gymnasium task from an open-source example); released four policies and validated them sim-to-sim in MuJoCo.

- Personal project on goal-directed quadrotor collision avoidance learned end-to-end from stacked depth frames in Gazebo (ROS2), using a TD3 baseline and a recurrent-PPO extension that flies genuine detours around occluders, reaching 80% deterministic success on the detour task.

Skills

Machine Learning & Reinforcement Learning: DDPG,TD3,SAC,and PPO, curriculum learning, reward design, domain randomization, sim-to-real transfer, Stable-Baselines3.

Control: MPC, LQR, H-infinity (H_{∞}), LPV, cascade PID, state estimation.

Simulation & Robotics: ROS 2 (ROS2), Gazebo, MuJoCo, Isaac Gym, Isaac Lab, PyBullet, URDF, MJCF, SLAM, Nav2, PX4, Jetson, Docker, Linux, Git, GitHub.

Computer Vision & Digital Twins: 3D Gaussian Splatting, COLMAP, SfM, MVS, FoundationPose, SAM2/SAM3, OpenCV, Depth Anything, image segmentation, neural rendering, Open3D, Unity/XR.

Programming & Tools: Python, PyTorch (deep learning), C++, MATLAB (Simulink), Bash, Arduino, NumPy, Pandas, Scikit-Learn, Matplotlib, TensorBoard, SolidWorks, CATIA V5, LaTeX, automated testing, continuous integration (CI).

Languages Spoken: Amharic (native), English (fluent), French (B1).

Education

Grenoble Institute of Technology (INP) ENSE3 <i>Master’s M2 (TSI) in Mobile, Autonomous and Robotic Systems. CGPA 15.53/20</i>	Sep 2023 – Sep 2024 <i>Grenoble, France</i>
Addis Ababa Science and Technology University <i>Master’s in Electromechanical (Mechatronics) Engineering. CGPA 3.92/4</i>	Jun 2021 – Mar 2025 <i>Addis Ababa, Ethiopia</i>
Addis Ababa Science and Technology University <i>BSc Degree in Electromechanical Engineering. CGPA 3.94/4</i>	Sep 2017 – Jun 2022 <i>Addis Ababa, Ethiopia</i>

Publications

M. T. Asfaw et al., “Benchmarking Open-Source Segmentation and Metric Monocular Depth Methods in 6DoF Object Pose Estimation with FoundationPose,” *IntRob’26*, Budapest, Hungary, 2026. [DOI](#)

S. Choudhary, **M. T. Asfaw**, et al., “Mind the Domain Gap: Benchmarking Structure-from-Motion Methods on Paired Industrial Physical-Digital Twin Datasets to Enable Radiance Field Rendering,” *ICPR Workshops*, Lyon, France, 2026. [DOI](#)

S. Choudhary, **M. T. Asfaw**, N. Ragot, et al., “Exploring the Physical and Digital Domain Gap in 3D Reconstruction: A Benchmark of Radiance Field Rendering Techniques on Paired Industrial Twins,” *Array (Elsevier)*. *(Under review)*

M. T. Asfaw, “Differentiable Render-and-Compare for 6-DoF Object Pose Rectification.” *(Being finalized for submission)*

Certifications

AutoMOOC (Master 2 level) on linear state-space control, University of Bretagne Occidentale [Link](#) | Further ROS2 robotics and applied control coursework, Udemy. [Link](#)

References

Available on request.