BARIS YAZICI

ROBOTICS SOFTWARE & ML ENGINEER

E-Mail · Portfolio · GitHub · LinkedIn

PROFESSIONAL SUMMARY

Robotics software engineer at Franka Robotics who builds and hardens the low-level interface that labs use to drive Franka FR3 arms. I work where the real-time C++ control loop meets ML: making libfranka robust for contact-rich, fault-prone deployment and exposing it to Python/PyTorch for data collection and policy training. Background spans dual-arm and mobile manipulation, humanoid teleoperation, and learning-based control, plus open-source robotics tooling used across the community (370+ GitHub stars).

KEY ACHIEVEMENTS

- Won **5th place and a $1,250 prize** in the **NASA Space ROS** competition for the Ingenuity Mars Helicopter simulation and control in ROS 2 / Gazebo. View Project →
- Authored **libfranka-sim**, a high-fidelity simulation backend implementing the *complete libfranka C++ API*, so the same control code runs in sim and on hardware unchanged, enabling sim-first policy development and CI without a robot. GitHub (80★)
- Built **deep-rl-grasping**, an open-source RL pipeline for robotic grasping (SAC/HER, domain randomization) reaching 99% pick accuracy in simulation, with documentation that grew it to **272 stars / 48 forks**. GitHub · Medium Post

PROFESSIONAL EXPERIENCE

Franka Robotics

Munich, Germany · 2022–Present

AI Robotics Software Engineer

- Designed and shipped the **ActiveControl** C++ interface: direct `writeOnce`/`readOnce` control that replaced libfranka's legacy callback-style loop, giving external controllers deterministic real-time access (commits →)
- Cut the libfranka client control-loop jitter from **~100µs to <10µs std-dev** by adding SIMD, eliminating dynamic memory allocation on the real-time path, and removing legacy MATLAB/Simulink-generated code
- Replaced the symbolic dynamics model with a real-time-safe **Pinocchio** integration (dynamics, kinematics, Jacobian) and a URDF-based architecture that adapts the control stack to humanoid, mobile, and full-scale mobile-manipulator robots
- Built CI/CD that bundles prebuilt libfranka and dependency `.so` binaries into a **pip wheel** that turns a from-source build into a one-line install, powering **pylibfranka**, my Python bindings used by ML researchers
- Developed cartesian coupling impedance control for cooperative dual-arm manipulation on a mobile dual-FR3 ("duo") platform, the main demo at ICRA '24 and CoRL '24
- Lead architect/maintainer of franka_ros2 (~200 clones/day); modernized the CMake packaging and Debian release pipeline; built a Jenkins "robots-in-the-loop" CI that cut bugs ~50%

Technical University of Munich

Garmisch-Partenkirchen · 2021

Research Assistant, Garmi Humanoid Robot

- Integrated navigation algorithms on the Garmi humanoid robot
- Built dual-arm teleoperation for Garmi using HTC Vive

SELECTED PROJECT

Contact-Rich Cable Insertion (Reinforcement Learning)

Intrinsic AI Challenge · 2026 · demo →

NVIDIA Isaac Sim · Physics-Aware PPO · Teacher–Student Distillation · DINOv2

- Trained a **physics-aware PPO (PA-PPO)** teacher in **NVIDIA Isaac Sim** for SFP/SC connector insertion on a UR5e, with auxiliary heads predicting next-step contact wrench, contact state, and plug/hole pose (~99% success on privileged state)
- Built a **teacher–student distillation** framework: distilled the privileged teacher into a vision-based student (3× frozen **DINOv2 ViT-S/14** + proprioception, dual-stream fusion) via MSE action-matching with no reward, reaching **~80% from RGB alone**
- Differential-IK Cartesian control with multi-scale reward shaping and domain randomization across poses, lighting, and physics engines (Isaac Sim, MuJoCo, Gazebo)

EDUCATION

M.Sc. in Computer Science — 2017–2020

Technical University of Munich — Outstanding Master's Thesis Award

B.Sc. in Robotics Engineering — 2012–2017

Sabanci University — GPA: 3.25/4.0