Onur Calisir

https://github.com/onurcalisir27 • (424) 440 9489 • onur.calisir@columbia.edu • www.linkedin.com/in/onurcalisir

EXPERIENCE

Columbia University — New York, NY
Graduate Researcher — Jan 2025 - Present

- Spearheaded research efforts of Nonlinear Adaptive Control Lab at Columbia University, supervised by Dr. Homayoon Beigi, in implementing learning based adaptive control algorithms for autonomous behavior of highly nonlinear systems, such as mobile robots, 6 DOF manipulator arms, and a quadcopter drone
- Engineered a custom built four-wheeled differential drive autonomous robot through custom designed and manufactured parts for assembly and a dual Raspberry Pi setup for separating low level motor control and higher level learning adaptive planning control
- Implemented custom ROS2 C++ packages for a mobile autonomous robot control and navigation, using custom C++ libraries for implementing unique ROS2 plugins for widespread ROS libraries such as ROS2 controls and Nav2, utilizing Github to open source the project with sharing documentation and tutorials on how to utilize the repository for the public community
- Developed sensor fusion frameworks combining RGB-D camera with Neural Networks such as Yolov6 with quadrature motor encoders and IMU's for state estimation, creating a modular architecture supporting experimentation with different sensor configurations
- Formulated implementation strategies for learning-adaptive controllers and prepared comparative analysis frameworks to benchmark performance against traditional PID and MPC controllers for trajectory tracking and error minimizing in repetitive environments, leveraging episodic learning strategies similar to Reinforcement Learning, albeit in real time and on real hardware

+90 3D Digital Factory — Istanbul, TR
Research&Development Intern — Jul 2023 - Sep 2023

- Designed and led end-to-end production of innovative keychains with movable/rotating components using SolidWorks and SLS technology on Stratasys H350, coordinating with the Rapid Prototyping team for client demonstrations
- Initiated design of an automated SLA post-processing machine, devising prototype separation mechanisms and modeling key components projected to increase production efficiency by cutting down on post-processing time by 15%
- Conducted comprehensive market research on SLA post-processing systems to support R&D strategy for presentation to the Scientific and Technological Research Council of Turkiye (TUBITAK)

PricewaterhouseCoopers (PwC) — Istanbul, TR
ERP Assurance Intern — Jun 2023 - Jul 2023

- Collaborated with ERP Sales team on digital transformation for a leading Turkish automotive parts manufacturer by facilitating and documenting daily client meetings to align ERP transformation strategies with business goals
- Analyzed client's multi-channel sales operations and implemented SAP modules streamlining order processing and improved operational efficiency by 20% through contributing on a proposal for an automated warehouse management model utilizing smart barcodes

Tur-Bo Jet Products — Rosemead, CA
Mechanical Engineering Intern — Jun 2022 - Aug 2022

- Created CAD designs for a mechanical butterfly check valve and assisted with its production and assembly, learning quality control processes and engineering specification implementation
- Migrated over 1,000 company design files to SolidWorks PDM cloud system, performing data integrity checks and organizing technical documentation

EDUCATION

Columbia University — New York, NY
M.S. in Mechanical Engineering [GPA: 4.04] — Expected Dec 2025

- Concentration: Robotics and Controls
- Coursework: Nonlinear Adaptive Control, Robot Learning, Model Predictive and Optimal Control, Reinforcement Learning, Probabilistic Robotics, Applied Robotics, Data Science, Advanced Manufacturing, Kinematics of Robots
- Teaching Assistant: Kinematics of Machines and Robots by Dr. Lin (Spring '25), Introduction to Control Theory by Dr. Chbat (Fall '24)

University of California, Los Angeles (UCLA) — Los Angeles, CA
B.S. in Mechanical Engineering [GPA: 3.72] — Jun 2024

- Technical Breadth: Computer Science
- Relevant Coursework: Data Structures and Algorithms in C++, Digital Control Systems & System Design Lab, Computer-Aided Design, Manufacturing Processes, Linear Algebra, Discrete Mathematics, Electrical Circuits Analysis, Thermodynamics, Heat Transfer, Fluids

SKILLS

- Programming: C++, Python, MATLAB & Simulink, SQL | CAD Software: Onshape, SolidWorks, Creo, AutoCAD, Catia
- Robotics: ROS/ROS2, SLAM, Gazebo, OpenCV | Systems: Linux(Ubuntu), Git, SAP ERP | AI/ML: PyTorch, TensorFlow/Keras
- Manufacturing: Additive (FDM, SLA, SLS), Machining and Tooling (Mill, Lathe, Laser Cutter, WaterJet), Soldering, PCB board design

PROJECTS

Automated Pill Dispenser - UCLA Capstone

- Led 6-person team in building and prototyping an automated pill dispenser achieving 95% dispensing reliability across varied pill sizes, while managing $500 budget
- Integrated Arduino/Raspberry Pi systems to manage 16 servo motors with redundant failure mechanisms, developing a modular design with user-friendly interface
- Developed multi-iteration hopper system with vibration motors and IR sensors, enabling precise single-pill dispensing through iterative design and testing