Patrik Dominik Pördi

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Work Experience

Robotics & Drone Engineer Salt Lake City, United States
ARK Electronics June-2024 -

- Delivered ROS2 tutorials on custom PX4 flight modes & Computer Vision applications, presented and held a workshop at ROSCon 2024 and 2025, respectively.
- Engineered GPS/IMU drivers, integrated PX4 on NVIDIA Jetson and Raspberry Pi platforms, and implemented encrypted logging for secure flight data.
- Performed systematic flight testing, contributed to drone design and diagnostics, and provided mentorship and technical guidance to interns.
- Brought extensive hardware expertise, including soldering, board-level troubleshooting, and seamless integration of third-party modules across embedded and autonomous systems.

Teaching Assistant in Robot Programming Classes College Park, United States
University of Maryland August-2023 to June-2024

- Delivered Python/C++ ROS 2 labs, held office hours, supported course setup and grading, supervised a TurtleBot maze competition for both undergraduate and graduate students.

UAV Engineer Trondheim, Norway
Aviant AS June-2023 to August-2023

- Performed big data analytics on Ulog data to evaluate control performance and measurement accuracy, while developing a computer vision–based system to track package deflection during winching.
- Enabled precise delivery in densely populated areas by implementing a high-accuracy RTK GPS solution.

Electrical Engineer Budapest, Hungary
Evosoft Hungary Kft. member of Siemens AG July-2020 to August-2021

- Designed a CNC cyber-physical system via OPC UA.
- Developed test environment and handled PLC programming of Siemens drive systems using TIA Portal.

Education

University of Maryland, College Park College Park, Maryland, May 2024
Master of Engineering in Robotics - GPA: 3.88/4.0

- Specialization in Autonomous Robotics
- Projects: Stochastic control of Drones, Geometric decentralized Drone swarms, 3D Vision and mapping

Budapest University of Technology and Economics | BME Budapest, Hungary, May 2023
Master of Mechatronics Engineering - GPA: 4.51/5.0

- Specialization in Cyber-Physical Systems
- Thesis: Design and implementation RMS and Industry 4.0 into a CNC manufacturing system
- Exchange semester online at University Technology of Sydney Sydney, Australia, June 2022
- Exchange year at Arctic University of Norway Narvik, Norway, June 2022

Bachelor of Mechatronics Engineering - GPA: 4.48/5.0 Budapest, Hungary, May 2023

- Specialization in Cyber-Physical Systems
- Thesis: Implementation of CNC Lathe Digital Twin simulation using Siemens tools
- German bilingual program: exchange at Karlsruhe Institute of Technology Karlsruhe, Germany, February 2020

Skills

Languages: English | non-native fluent, German | non-native fluent, Hungarian | native

Software: C, C++, ROS2, Python, PX4, ArduPilot, Betaflight, MATLAB & Simulink, Linux CLI, Git, OpenCV, PLC, PyTorch3D

Modeling: Solidworks, Visual Components, Siemens Software, Gazebo, 3D Printing

Expertise: Autonomous Robotics, Data Science & Physical AI, Digital Twin Simulations, Machine Learning, Computer & 3D Vision

Research experience & activities

Dronecode Foundation United States
PX4 Autopilot ROS2 maintainer October 2025-

- Maintaining the ROS2 support on PX4, implemented Zenoh middleware

HYPE (Hungarian Young Professional Engagement) Network Washington DC, United States
Hungarian & American Leadership Network May 2025-

- Participated in monthly seminars on effective leadership, delivered by prominent American leaders

IEEE RAS United States
P2817- Verification of Autonomous Systems May 2024-
  – Participating on meetings to work on Robotics Standards

Competing in NIST 2023 First Responder UAS 3D Mapping Challenge Maryland, United States
Autonomous micro air vehicle (AMAV) team, UMD September 2023-
  – Implementing 3D mapping solutions on the drone.

Research on STEP file-based automatic production time estimation Budapest, Hungary
Department of Manufacturing Science and Engineering, BME January 2020-June 2022
  – A software application was created using Python and regular expressions (RegEx) that can extract
    machining features from any provided STEP file and then estimating production-related
    measurements.

Research on Reconfigurable Manufacturing Systems with Robotics concentration Narvik, Norway
Department of Industrial Engineering, UiT January 2022-June 2023
  – Multiple versions of RMS were developed for oil industry scenarios using Python and Visual Components.

Engineering student project team member Budapest, Hungary
BME Mechatronics Student Society January 2018-June 2022
  – Investigated software and hardware development for projects, such as line-follower mini car,
    jumping robot, closed chain mechanism with inverse kinematics simulation.
  – Held consultations in programming, manufacturing, and robot modeling subjects.

Scholarships & Honors

Rosztoczy Foundation Scholarship Program - Hungarian Scholarship	2023
Hungarian American Coalition Dr. Elemér and Éva Kiss Scholarship	2022, 2023
Second Place, Hungarian National Round of the Conference of Student Research	2023
Presented a paper on STEP file-based automatic production time estimation	
Fulbright Scholar Award for Master's Studies in the United States	2022
First Place, Conference of Student Research at BME (Budapest University of Technology and Economics)	2021
Qualified for the National Student Research Conference with a paper on STEP file-based automatic production time estimation	
Professional Scholarship for Exceptional Members of the BME German Bilingual Class	2019
BME Study & Sport Scholarship	2020
Outstanding Achievements in Hungarian Handball Championships	2020
Third Place, Hungarian University - College National Handball Championship	2020

Related Coursework

Modeling, Simulation and Path Planning

3D Path Planning for VTOL Drones
Implemented the A* algorithm on a 3D NumPy array representing complex terrain, ensuring climb and descend constraints were met, and smoothed the path for realistic drone delivery scenarios.

Path Planning Algorithms (Dijkstra, A*, RRT, RRT*, RRT-EP*, RRT-CONNECT, RRT-EP)
Implemented path planning algorithms for point and non-holonomic mobile robots, using priority queues and dictionaries for optimal path planning using Python.

Control Theory

System Identification & Off-board Control (MODAL AI Drone)
Developed C++ application to implement MAVROS communication for acceleration, velocity, and position control, analyzing and visualizing data using Python and MATLAB.

Ball Trajectory Estimation & Catching (Quadcopter)
Developed a State Machine in C++ using ROS packages to catch a ball with a quadcopter, integrating Kalman filtering using VICON for trajectory prediction and coordinate system transformations.

Stochastic Systems
The project involved analyzing and controlling an MAV system using a PD control strategy, it aimed to determine steady-state variances of angle and torque, optimize control gains to minimize variances, design compensator transfer functions, and employ LQR and LQG controllers to mitigate noise and disturbances in the system.

Computer Vision & AI

3D Mesh, Point Cloud, and Voxel Single-View Predictions
Implemented supervised and unsupervised AI models for predicting 3D structures, including mesh, point cloud, and voxel representations, from single- and multi- view images using computer vision techniques. Implemented image processing, object detection, and deep learning algorithms to generate accurate 3D reconstructions from 2D image.