FATEMEH POURHASHEM

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Enthusiastic Robotics Software Engineer with expertise in autonomous navigation and control, programming, and computer vision, demonstrated through successful projects in vehicle monitoring systems and aerospace applications. I thrive in challenging environments where I can push boundaries, contribute to collaborative teams, and transform ambitious technological visions into reality.

EDUCATION

Master of Science in Aerospace Engineering (Flight Dynamics and Control) — 2020 - 2023

Amirkabir University of Technology, GPA: 4.0/4.0 (18.5/20.0)

- **Master Project:** Developed a voice-controlled UAV for object tracking using speech recognition (OpenAI Whisper, RNNs) and object detection (SAHI algorithm) in Webots with ROS2, integrating RGBD cameras for distance estimation.
- **Achievements:** Ranked second among all co-entrants in the master's program

Bachelor of Science in Aerospace Engineering — 2016 - 2020

Amirkabir University of Technology, GPA: 3.625/4.0 (17.2/20.0)

- **Bachelor Project:** Estimated initial civil aircraft design parameters using neural networks and singular value decomposition in MATLAB

PROFESSIONAL EXPERIENCE

Software Developer | Argos | Remote — October 2022 - June 2025

A German-based start-up company developing autonomous vehicle monitoring systems and advancing regulatory formalization

- **Autonomous Vehicle Testing**
  - Leading a team of 4 from project planning through development
  - Generated complex OpenSCENARIO scenarios for robust validation in CARLA and ESMINI
- **Signal Processing**
  - Conducted signal processing and noise reduction techniques mainly on position, acceleration and lidar data
- **System Development**
  - Developed a GUI and API for real-time vehicle monitoring, migrating Python codebase to C++ and designed custom maps with RoadRunner
  - Leveraged ROS2, ros-bridge, rviz, and Autoware to test real-world data, managing code with Git and GitLab CI/CD pipelines

Robotics Engineer | Sadid Informatics — Decemeber 2023 - March 2024

A robotics company specializing in autonomous solutions for poultry farm monitoring automation

- Designed autonomous navigation using ROS Noetic's Navigation Stack and Hector SLAM, achieving precise movement with 2D LiDAR and depth camera
- Fused sensor data via Kalman filters for accurate mapping, validated in Gazebo simulations
- Migrated systems to ROS2, implementing Nav2 and visual-slam, improving performance and maintainability

Artificial Intelligence Engineer (internship) | AI medic **September 2022 - November 2022**

- Developed a deep learning system with EfficientNet and U-Net for semantic segmentation of ocular lesions and conducted price estimation through preprocessing techniques
- Built an OCR model using Keras Functional API for medical image analysis

Computer Vision Engineer (internship) | Hamtech **August 2022 - September 2022**

- Applied web scraping and builded a telegram bot for local waste data collection and implemented YOLO models for sorting waste into four categories.
- Applied various anomaly detection methods to enhance classification accuracy in a recycling project

TECHNICAL PROJECTS

Custom 3D Printer Development

- Designed and built a 3D printer from scratch, integrating stepper motors, microcontrollers, and customized Marlin firmware for precise control.
- Tested designs with Cura, achieving high-quality prints with minimal material waste.

Ongoing Image Processing for Car Engine Parts Assembly Detection

- Designing real-time image processing algorithms using OpenCV for car engine component detection and assembly verification, integrating with robotic assembly lines.

HONORS AND ACTIVITIES

ROSCon 2024 Scholarship Recipient

- Awarded the ROSCon 2024 scholarship (Attended “Demistifying Networking” workshop in Odense, Denmark)

ROSCon 2025 Scholarship Reviewer

- Reviewed scholarship applications for ROSCon 2025

Mentor for Bachelor Project

- Mentored a bachelor student through her project on quadcopter path planning, guiding the development of navigation algorithms and simulation in ROS2.

TECHNICAL SKILLS AND TOOLS

• **Robotics:** SLAM, Simulation (Gazebo, CARLA, Webots, ESMINI), ROS (ROS1, ROS2), Autoware, Control Systems
• **Programming:** C++, Python, API Development, Git, CI/CD
• **Machine Learning:** Traditional Machine Learning Techniques, Deep Learning (RNNs, CNNs)
• **Tools:** MATLAB, Simulink, OpenSCENARIO, RoadRunner, Linux (Ubuntu)

REFERENCES

Dr. Mehdi Sabzehparvar: Assistant Professor at Amirkabir University of Technology, sabzeh@aut.ac.ir
Dr. Majid Esmailifar: Assistant Professor at Amirkabir University of Technology, esmailifar@aut.ac.ir

Ali Shakeri: CEO at Argos, alishakeri68@gmail.com