Nazrin Gurbanova

Master's Student in Robotics

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Education

University of Maryland, (website) Aug. 2023 - May. 2025

Master of Engineering, Robotics, ***GPA: 3.48*** *College Park, MD, USA*

Robot Modelling, Control of Robotic systems, Planning for Autonomous Robots, Perception for Autonomous Robots, Fundamentals of AI and Deep Learning, Decision Making for Robotics, Software Development for Robotics

Baku Higher Oil School, (website) Sept. 2018 - Jun. 2023

Bachelor of Science, Process Automation Engineering, ***GPA: 3.61*** *Baku, Azerbaijan*

Control Theory I and II, Microprocessors, Pattern Recognition, Algorithms and Data Structures, Digital Signal and Data Processing

Experience

Robotics Engineer Intern June. 2024 – Aug. 2024

Void Robotics *Marathon, FL, USA*

Worked with C++ modules for robotics in a Linux environment, utilizing Docker, ROS2, and Gazebo for navigation, simulation, and deployment.

Instrumentation and Automation Intern Feb. 2023 – Aug. 2023

SOCAR Methanol *Baku, Azerbaijan*

Familiarization with the process and safety procedures inside the plant. Pressure relief valves, Flow meters, Level transmitters, RTDs and their configuration.

Projects

Finder Bots Swarm Intelligence Oct. 2024 - Dec. 2024

Software Development for Robotics, GitHub Repository *University of Maryland*

Developed a 12-TurtleBot swarm system using ROS for item location and implemented SLAM for localization and obstacle avoidance, validated through Gazebo simulations.

TrackAI: Human Detector and Tracker Sep. 2024 - Oct. 2024

Software Development for Robotics GitHub Repository *University of Maryland*

Implemented human detection and tracking using YOLOv8 and SORT/CSRT for collision avoidance and path planning. Developed C++ module with OpenCV, ensuring real-time performance on resource-constrained hardware.

A* Algorithm on a TurtleBot3 Robot Mar. 2024 - Apr. 2024

Planning for Autonomous Robots, GitHub Repository *University of Maryland*

Implemented A* algorithm with differential drive constraints for TurtleBot3 to navigate from a start to a goal point. Developed 2D simulation in Python and visualized optimal paths in Gazebo.

Pick and Place using a Mobile Base Manipulator Nov. 2023 - Dec. 2023

Introduction to Robot Modelling, GitHub Repository *University of Maryland*

Developed ROS2 simulation for a robotic manipulator (UR3e arm, mobile base), automating pick-and-place tasks and enhancing operational efficiency

Leadership Experience

Teknofest Azerbaijan 2022, Team Leader Jan. 2022 – May. 2022

Robotics Category – 2nd place (Hexapod Model), Sailplane Category – 3rd place (Skywalker X8) *Baku, Azerbaijan*

Led a team of 6 to develop a Hexapod Model with 6DoF for the Robotics category and a Skywalker X8 drone for the Sailplane category, achieving top rankings. Programmed sensor integration, autonomous flight modes, and real-time data transmission with Arduino and Raspberry Pi.

EdTech Startup Competition 2021, Project Manager Nov. 2021 – Jan. 2022

1st place, Project on Antiplagiarism in Azerbaijani Language *Baku, Azerbaijan*

Led a project securing a grant of 10,000 AZN after winning 1st place among 244 teams.

Technical Skills

Programming: C/C++, Python, Java, MATLAB, Microcontroller Programming (Arduino, ESP32, Raspberry Pi)

Tools: Linux bash, Gazebo, ROS2, git, OpenCV, PyTorch