

ONURCAN YILMAZ

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SUMMARY

PhD Researcher and Electrical and Electronics Engineer specializing in Control and Robotics, proficient in ROS, LiDAR-based mapping, odometry, and sensor fusion. Experienced in developing real-time robotic systems and hardware/software integration and advancing robotic perception technologies.

EDUCATION

PhD in Electrical and Electronics Engineering, Hacettepe University Feb 2025 - ongoing
Research Area: Robotic Mapping, Sensor Fusion, LiDAR Odometry

MSc in Electrical and Electronics Engineering, Hacettepe University (GPA: 3.58) Feb 2022 - Feb 2025
Funded by 5G and Beyond Joint Graduate Support Program and TÜBİTAK 2210-A
Thesis: *Sensor Fusion and Robotic Mapping using 3D LiDAR Odometry on a Quadraped Robot Platform*

BSc in Electrical and Electronics Engineering, Middle East Technical University (GPA: 2.70) 2015 - Feb 2021
Graduation Project: *Design and Construction of a Robot that can make Mapping and Localization*
Member and 1-term Vice President, IEEE METU Robotics and Automation Society

THESIS

- **Onurcan Yılmaz**, *Sensor Fusion and Mapping on a 4 Legged Robot System with 3D LiDAR*, M.Sc. Thesis, Hacettepe Üniversitesi, Ankara, Türkiye, February 2025. Advisor: Doç. Dr. İsmail Uyanık.

PUBLICATIONS

- Mehmet Muratoğlu, **Onurcan Yılmaz**, Emin Yusuf Aydın, Hasan Doğan, İsmail Uyanık, *Low-Latency Multi-Notch Filtering for Active Sensing in Weakly Electric Fish*, Gazi Medical Journal, Vol. 37, p. 8, 2026.
- **Onurcan Yılmaz**, İsmail Uyanık, *Improving LiDAR Odometry with Hausdorff Distance-Based Variance Estimation*, 2025 IEEE 21st International Conference on Automation Science and Engineering (CASE), pp. 2477–2482, 2025. DOI: 10.1109/CASE58245.2025.11163897
- **Onurcan Yılmaz**, Eren Cem Göksülük, İsmail Uyanık, *Sistem tanılama yöntemlerinin zayıf elektrik balıklarının hareket dinamikleri üzerinden karşılaştırılması*, Journal of the Faculty of Engineering and Architecture of Gazi University, Vol. 40, No. 2, pp. 877–887, 2025.
- Eren Cem Göksülük, **Onurcan Yılmaz**, İsmail Uyanık, *Comparative System Identification of the Refuge Tracking Behavior in Weakly Electric Fish*, 10th IFAC Conference on Foundations of Systems Biology in Engineering (FOSBE), Corfu Island, Greece, 2024.
- Emin Yusuf Aydın, **Onurcan Yılmaz**, Sinan Topçakar, İsmail Uyanık, *Closed-loop Manipulation of Active Sensing Movements of Weakly Electric Fish During Refuge Tracking*, Integrative and Comparative Biology, Vol. 64, pp. S29, 2024.

EXPERIENCE

Research and Teaching Assistant Dec 2023 - ongoing
Hacettepe University, Department of Electrical and Electronics Engineering *Ankara*

- Investigating linear time-periodic (LTP) system identification, Floquet theory and harmonic transfer functions.
- Conducting research on robotic mapping, sensor fusion, and SLAM algorithms.
- Conducting laboratory sessions.
 - ELE205 Circuit Theory Laboratory (2023, 2024)
 - ELE227 Fundamentals of Digital Systems Laboratory (2023, 2024, 2025)
 - ELE228 Programming for Circuits and Systems (2024)

- ELE313 Electronics Laboratory II (2023, 2025)
- ELE338 Microprocessor Architecture and Programming Laboratory (2023, 2024)
- ELE434 Computer Control Laboratory (2023, 2024)
- ELE447 Microwave Techniques Laboratory I (2024)
- Mentoring senior-year projects related to robotics.
 - Construction of a ROS supported remote controlled mechatronics robot. (2024)
 - 3D SLAM using Stereo Camera and 3D LiDAR on a Quadruped Robot. (2024)
 - Fusion of Stereo and LiDAR Pointcloud using Papoulis-Gerchberg Algorithm (2023)

5G VATS R&D Associate

May 2022 - Dec 2023

Turkcell Technology

Ankara

- Integrated VLP-16 LiDAR and ZED Stereo Camera on a quadruped robot with Jetson NX.
- Developed covariance estimation methods for LiDAR Odometry algorithms.

Hardware Design Engineer

Mar 2021 - May 2022

Kuartis Technology

Ankara

- Designed STM32-based embedded systems hardware using Altium Designer.
- Developed embedded software using FreeRTOS.
- Built automated testing tools using Raspberry Pi for ESP32-based products.
- Oversaw MIL-STD-810-H compliance tests.

Intern

2019 Summer

Garanti Technology

Istanbul

- Tested new released z/OS migration on a sandbox environment.
- Assisted in system maintenance and troubleshooting tasks.

Intern

2018 Summer

SPACE & DEFENCE TECHNOLOGIES (SDT)

Ankara

- Worked on embedded systems software development.
- Implemented sensor data acquisition and cloud storage using MQTT protocol.

SKILLS

Programming	C/C++, Python, MATLAB (Simulink)
Robotics	ROS, SLAM, LiDAR Odometry
Embedded Systems	STM32, FreeRTOS
Hardware Design	Altium Designer, Fusion 360
Tools	Git, Linux, Jetson Platforms
Languages	Turkish (Native), English (Professional)

PROJECTS

Graduation Project - Design and Construction of a Robot that can make Mapping and Localization

Design and construct a vehicle which can extract the physical and magnetic map of a 1.5m x 2.5m game field containing physical and magnetic landmarks. Once the map is extracted, the vehicle is required to localize itself along its path based on the extracted map. The vehicle should be remotely controlled. [Final Presentation](#)

EEE STAR Project - Orangutan - Passive Dynamic Walker Reconstruction of a robot named [Rando](#) with 2 new IMU sensors and Wi-Fi connection to have online angular velocity measurements of the legs for loop closure. For more information, you can see our [Poster](#) at the project fair.

BallBot Construction of a Ballbot which can balance and move over a ball. Worked on hardware and software development of torque control of a DC motor. Conducted with IEEE METU RAS.

EXTRA-CURRICULAR ACTIVITIES

- Camping, Swimming, Snorkelling, Diving (SSI OWD) and occasionally Spearfishing

LEADERSHIP

Vice President of IEEE METU Robotics and Automation Society

2018 - 2019

- Coordinated technical affairs of the society like; Projects, Workshops, etc.