MUHAMMED SEZER

Robotics & AI Enthusiast and Engineer

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EXPERIENCE

Co-Founder
Orion Robotics, Robotics Start-up

📅 September 2021 – Present   📍 Ankara / Turkey

- Involved in entrepreneurship for developing a mobile ground vehicle for research purposes, featuring modular hardware and software.
- Responsible for the design of ROS2 packages, drivers, control systems, electronics, and compatibility implementations.
- Developed robust testing protocols for both hardware and software aspects of the project.
- Created a simulation environment for the mobile robot, aiding in testing and development.
- Ensured comprehensive documentation of the product, facilitating future development, usage, and troubleshooting.

Research Intern
TED University

📅 2022, Summer   📍 Ankara / Turkey

- Conducted research on rehabilitation robotics for disabled individuals, focusing on the development and optimization of these advanced systems.
- Contributed to the development of both hardware and software for testing purposes, ensuring the effectiveness and safety of the rehabilitation robotics.
- Conducted user testing with individuals to gain feedback and further refine the rehabilitation robotic systems.
- Contributed to a research paper based on the work conducted, which was published at the TOK conference.

Part-Time Engineer
TUBITAK

📅 September 2021 - September 2022 📍 Gebze / Turkey

- Contributed to the development of various image processing algorithms, enhancing the capabilities of the department's projects.
- Focused on extracting text from given images using OCR Tesseract and various filters from OpenCV, improving data utilization from images.
- Worked within the Veri Kıymetlendirme Bölümü, contributing to key projects and gaining valuable experience in data evaluation and processing.

PROJECTS

Teknofest Artificial Intelligence Competition
Self-organized Team

MY LIFE PHILOSOPHY

"I do what I love and I make it lovely"

MOST PROUD OF

🏆 **Mentorship in AI**

- Provided invaluable mentorship to nearly 15 different teams, empowering them to grow in the dynamic field of artificial intelligence.
- Dedicated to fostering a community of learning and development in AI, continually sharing expertise and guidance.

💓 **Impact through Education**

- Created an educational YouTube channel to share our team's software skills and professional mindset.
- Aimed to inspire and guide aspiring developers, and to foster a passion for lifelong learning.

💓 **One-on-One Guidance**

- Privileged to have helped hundreds of individuals through personalized one-on-one sessions, providing mentorship and guidance.
- Committed to each individual's growth, contributing positively to their University paths.

💓 **METU Machinery Club Contribution**

- Played a pivotal role in the METU Machinery Club, preparing and delivering nearly 20 courses.
- The opportunity to share knowledge and passion with fellow enthusiasts was a rewarding and enriching experience.

ACHIEVEMENTS

- Achieved 1st and 2nd place in the competition, setting an all-time best score in the process.
- Led the establishment of a competitive team focused on participating in the Teknofest Artificial Intelligence competition.
- Undertook the creation of a comprehensive dataset consisting of 300,000 labels and 25,000 images, serving as the foundation for our competition entry.
- Developed an object tracking algorithm, contributing to the advanced functionality of our AI model.
- Successfully implemented the SAHI algorithm into the YOLOv5 framework, enhancing our AI model's detection capabilities.
- Built an automatic benchmark tool to continuously evaluate the performance of our AI model and algorithms.
- Automatically generated PowerBI tables to provide a comprehensive overview of the model's and algorithms' performance on the test dataset.
- Following the competition, took the initiative to publicly share the dataset, providing a valuable resource for future competition entrants and AI enthusiasts.
- Offered free mentorship to nearly 15 different teams, sharing expertise and guidance to aid their progress in the AI field.

Mobile Robotic Vehicle Development

Self-managed Project

📅 September 2019 - September 2022　📍 Ankara / Turkey

- Engaged in the conceptualization, design, and production of a mobile robotic vehicle over the course of three years.
- Utilized CAD software to design the 3D model of the robot, ensuring optimal design for functionality and ease of production.
- Employed 3D printing technologies and woodworking skills to physically produce the robot based on the CAD designs.
- Contributed to the design and manufacturing of a custom circuit board to control and operate the robotic vehicle.
- Leveraged expertise in electronics and embedded systems for the implementation of the robot's control system.
- Developed ROS2 packages and defined custom message types to facilitate intercommunication between different components of the system.
- Integrated Navigation2 (Nav2) into the robotic vehicle, allowing for sophisticated autonomous navigation capabilities.
- Authored a dedicated ROS2 package for a desktop PC to remotely control and monitor the robotic vehicle.
- Tested and optimized the robotic vehicle's performance in various conditions, ensuring its robustness and reliability.
- Documented all stages of the project, from design to production, facilitating potential reproductions and further improvements.
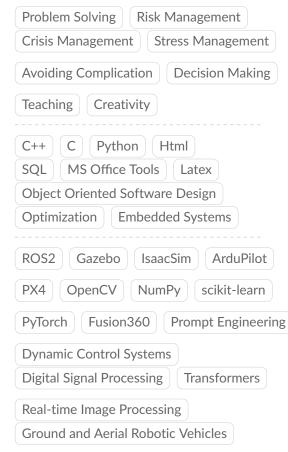
Swarm Robotics Research Project

Middle East Technical University Robotics Center

📅 September 2021 - Present　　　📍 Ankara / Turkey

- Worked under the guidance of Associate Prof. Ali Emre Turgut.
- Engaged in voluntary contribution towards research and development in swarm robotics.

🏆 **#1 in Entrepreneurship competition**
Atılım University

🏆 **#1 and #2 Artificial Intelligence competition around Turkey**
Teknofest 2022

🏆 **#2 Young Entrepreneurs Idea Marathon**
UNICEF 2023

🏆 **Mansion in University Students Research competition**
Tubitak 2242

STRENGTHS

Problem Solving　Risk Management
Crisis Management　Stress Management
Avoiding Complication　Decision Making
Teaching　Creativity

C++　C　Python　Html
SQL　MS Office Tools　Latex
Object Oriented Software Design
Optimization　Embedded Systems

ROS2　Gazebo　IsaacSim　ArduPilot
PX4　OpenCV　NumPy　scikit-learn
PyTorch　Fusion360　Prompt Engineering
Dynamic Control Systems
Digital Signal Processing　Transformers
Real-time Image Processing
Ground and Aerial Robotic Vehicles

LANGUAGES

Turkish　●●●●●

English　●●●●●

Russian　●○○○○

EDUCATION

B.Sc. in Electrical & Electronics Engineering

Middle East Technical University
📅 2017-2023

REFEREES

Prof. Klaus Werner Schmidt

- Focused on embedded mapping using data from range and bearing sensors mounted on robots.
- Involved in extracting key points from point cloud data, contributing to the process of mapping the environment.
- Carried out extensive work on range and bearing sensor technology.
- Documented the progress and developments throughout the project.
- Assisted in project management, ensuring the successful and timely completion of tasks.

PUBLICATIONS

@ Electrical Electronics Engineering

✉ schmidt [at] metu.edu.tr

Middle East Technical University

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Prof. İlkay Ulusoy

@ Head of Electrical Electronics Engineering

✉ ilkay [at] metu.edu.tr

Middle East Technical University

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Ali Rıza Küçük

@ Intel - Former Regional Consumer Sales Director

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