İbrahim Doruk Kızıloklu

Robotics Engineer

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https://www.linkedin.com/in/ibrahimdorukkiziloklu/   https://ibrahimkiziloklu.github.io/
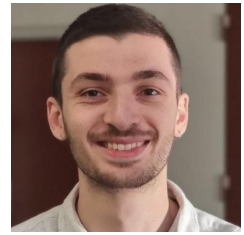
SUMMARY

Robotics Engineer experienced in designing and building a wide range of robotics systems including robot arms, biomimetic robots and medical rehabilitation devices. Skilled in mechanical design ,control theory, autonomous navigation and computer vision.

EXPERIENCE

Research Assistant

Biomechanics Lab Aalborg University

03/2023 - 09/2023

Design and development of a Five-Bar Parallel Arm Robot aimed at biomedical applications, focusing on precision and optimized kinematics.
Research on motion dynamics and nonlinear control systems to meet the application requirements.
Conducted experiments involving human participants to validate the robot's performance and usability in real-world scenarios.
Revised and upgraded the design of a lower body exoskeleton for Hamstring Injury Rehabilitation and prepare necessary exercise patterns for rehabilitation.

Mechatronics Engineer

Cyprus Robotics

01/2020 - 7/2022

Designer for a biomimetic underwater robot for IBAK Defence.
Collaborated with Orca – Caretta Robotics on underwater vision systems for marine applications, including autonomous debris detection and marine life monitoring.
Developed fish detection and species classification algorithms using computer vision and deep learning for Caretta's underwater surveillance system
Developed a specialized tail mechanism for realistic motion.
Conducted detailed kinematic and dynamic analyses to optimize therobot's movement patterns and improve maneuverability.
Establishing feasibility on manufacturability, material, cost, weight and similar criteria according to design.
Preparing engineering release processes (2D drawings, 3D CAD, BOM)

Engineering Intern

GÜNSEL Electric Vehicles

06/2018 - 09/2018

Design of interior parts(PDU bracket ,BCM bracket)in vehicle design projects.
Contributed to the creation of technical documentation to support manufacturing andassembly processes.

EDUCATION

Robotics(MSc)

Aalborg University

09/2022 - 02/2025

Mechatronics Engineering(BSc)

Dokuz Eylül University

09/2016 - 02/2020

SKILLS

CAD & Modeling: Solidworks, Nx

Programming & IT : Python, C , C ++, Linux, ROS, Docker, GIT, Matlab, OpenCV

Robotics:Kinematics and Dynamical Analysis,Autonomous Navigation, Object Detection & Tracking , NonLinear Control Systems

PUBLICATIONS

Design and Stiffness Modeling of a Novel Planar Parallel Robot with Variable Stiffness Actuators

📅 2024

🔗 https://link.springer.com/chapter/10.1007/978 3 031 67383 2_30

PROJECTS

A Comparative Analysis Between the Additive and the Multiplicative Extended Kalman Filter for Satellite Attitude Determination

10.48550/arXiv.2307.06300

This project focuses on a practical comparison between the MEKF and the Additive Extended Kalman Filter in satellite attitude estimation.

Underwater Biomimetic Robot Prototype

First prototype for tail mechanism of Biomimetic Robot displayed in SAHA EXPO International Defence & Aerospace Exhibition in Istanbul.

Control of an Exoskeleton for Assessing Human Lower Limb Mechanics

Engineered an exoskeleton prototype targeting the study of hamstring muscle mechanics to enhance sports injury rehabilitation.

Underwater Fish Detection and Tracking System

Developed an AI-based vision system for autonomous underwater vehicles to detect, classify, and track various fish species in real-time. The system utilized deep learning models (CNN architecture) optimized for underwater environments with limited visibility.