

BATUHAN TOKER

Robotics Technologist

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Github LinkedIn ResearchGate
To learn more about my skills and experience, please visit my website and GitHub.



EXPERIENCE

Technical University of Munich 📅 Apr 2022 – Apr 2023
Researcher, Neuroprosthetics and Human-Centered Robotics Laboratory

- Taught 3 courses (100+ students in total) and conducted research projects on rehabilitation robotics, artificial limbs, neuroprosthetics, machine learning, model-based engineering, myoelectric control, and system identification
- Supervised 10+ student projects, held 5 exercises, in various engineering disciplines (mechanical, electrical, computer, biomedical, etc.)
- In particular, specialized on prototyping, system identification, myoelectric control, and data science.

Sabancı University 📅 Sep 2018 – Sep 2021
Researcher, Human Machine Interaction Laboratory

- Taught undergraduate and graduate courses (350+ students in total) on autonomous mobile robotics, industrial control, and differential equations.
- Conducted research on vibration and control of dynamic systems, human-centered design, real-time systems, and haptic interfaces.
- In particular, specialized on prototyping, human-subjected experiments, system identification, haptic interfaces, force control, impedance/admittance control, compliant actuators, series elastic actuation, passivity, teleoperation.

EDUCATION

Ph. D. in Computer Engineering 📅 Apr 2022 – Present
Technical University of Munich, Germany

Thesis: A Control Framework for Multi-DoF Under-Actuated Prosthetic Hands based on Impedance Control

- Proposed and developed a design and control framework for bio-inspired multi-DoF under-actuated prosthetic hands.
- Framework utilizes EEG and EMG signals to generate desired position, a pose adaptation mechanism for control inputs, an impedance control architecture for grasp compliance, and a sensor fusion algorithm for robust and compliant physical human-robot interaction control.

M.Sc. in Mechatronics Engineering 📅 Sep 2013 – Sep 2021
Sabancı University, Turkey

Thesis: A Novel Suspended-Load Backpack with Manually Adjustable Impedance to Reduce Metabolic Cost of Carrying Loads

- Designed and evaluated a novel passive suspended-load backpack with adjustable impedance, resulting in reduced peak inertial forces (42%) and metabolic cost (10%) compared to traditional backpacks. (N=8)
- Implemented efficient and compact designs with appropriate filtering characteristics using two distinct approaches: negative transverse stiffness of axially loaded beams and an inerter between the load and frame.

B.Sc. in Mechanical Engineering 📅 Sep 2013 – Jan 2018
Abdullah Gul University, Turkey

Thesis : Linear Camera Slider based on a wing-mechanism

- Designed and implemented a wing camera slider using a 1 actuator and 2 link planar arm, resulting in linear motion.
- Conducted mechanism design, kinematic analysis, component design, material selection, CAD design, control, and computer vision.

INTERNSHIPS

- Ingeniarius LDA 📅 Jul 2018 – Sep 2018
Intern at Summer school @University of Coimbra
- AGU Maker Lab 📅 Sep 2016 – Aug 2018
Full time robotics engineering intern
- MEKOSAN Makina 📅 Jul 2017 – Sep 2017
Full time manufacturing engineering intern
- Metro Istanbul 📅 Jun 2017 – Jul 2017
Full time maintenance engineering intern
- Dener Makina 📅 Jul 2015 – Aug 2015
Full time quality and control engineering intern

SKILLS

Multi-disciplinary Research Design
Mathematics Project management
MATLAB Python C++ HTML
Machine learning Computer Vision
Robotics : Kinematics, Dynamic, Haptics, Control theory, Autonomous systems, Teleoperation
Tools : Solidworks, ANSYS, Simulink, ROS (Gazebo, Moveit), Image-Video-Audio editing tools

PUBLICATIONS

- Atay, M. et al. (2020). "Haar wavelet collocation method for linear first order stiff differential equations". In: vol. 34. ITM Web of Conferences.
- Toker, B. et al. (2020). "Singular Perturbation Initial Value Problems with Interpolated Variational Iteration Method". In: AIP Conference Proceedings.
- Atay, M. et al. (2018). "Numerical Analysis of Stiff Differential Equations via Interpolated Variational Iteration Method". In: vol. 24. Journal of Basic and Applied Research International, pp. 15–24.
- Cihan, C. et al. (2018). "The numerical solutions for stiff ordinary differential equations by using interpolated variational iteration method with comparison to exact solutions". In: vol. 1978. AIP Conference Proceedings.