Research Assistant Berk Hızarcı

Istanbul Technical University (ITU)
Department of Electrical Engineering
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Employment History

02/2025 – Present — **Research Assistant,** Department of Electrical Engineering, İstanbul Technical University.

11/2022 – 07/2023 — **Part-Time Grid Engineer,** Siemens Gamesa Renewable Energy.

Education

02/2024 – Present — **Ph.D. Electrical Engineering, Istanbul Technical University.**

- Emphasis: Motor Drives, Power Electronics, Deep Reinforcement Learning
- Research Area: Intelligent control and optimization of electric drive systems
- Advisor: Assoc. Prof. Dr. S. Baris Ozturk

09/2020 – Present — **B.Eng. Astronautical Engineering, Istanbul Technical University.**

09/2019 – 02/2024 — **B.Eng. Electrical Engineering, Istanbul Technical University**.

- Graduation Project: *Control of Permanent Magnet Synchronous Motor Drive Using Deep Reinforcement Learning*
- Emphasis: Power Electronics & Motor Drives
- Advisor: Assoc. Prof. Dr. S. Baris Ozturk
- Cumulative GPA: 3.59 / 4.00

09/2015 – 06/2019 — **High School Diploma (Mechatronics Technician), Private İzmir Atatürk Organized Industrial Zone NUMTAL Vocational and Technical High School.**

- Technical focus: Mechatronics, PLC programming, industrial motor systems

Research Interests

Electric Machines, Drives, and Power Electronics

- Design, modeling, and control of electric machines and motor drive systems
- Power electronics for energy conversion, including DC–DC converters and voltage-source inverters
- Multilevel, reduced-switch, and fault-tolerant drive topologies

Advanced Control and Artificial Intelligence

- Sensorless and sensor-reduced control of AC drive systems
- Optimization-based control and auto-tuning
- Application of artificial intelligence techniques, with emphasis on deep reinforcement learning, to electric drives and power electronic systems

Research Interests (continued)

- **Modeling, Simulation, and Validation**
  - Modeling, simulation, and analysis of power electronic and drive systems
  - Control implementation using DSP- and microcontroller-based platforms
  - MIL, SIL, PIL, HIL, C-HIL, and P-HIL simulations and rapid control prototyping for validation of control algorithms

Professional Experience

02/2024 – 01/2027 — **Project Researcher, TÜBİTAK 1004 Programme**

- Project: Design and Implementation of High-Efficiency, High Power Density Multilevel Inverter-Fed Electric Vehicle Drive System with High Bus Voltage
- Design, optimization, prototyping, and testing of electric drive systems with a system-level perspective, from high-voltage DC bus to traction motor output
- Focus on power electronics, electric drives, and EV propulsion systems

2025 – Present — **Laboratory Instructor / Assistant, Istanbul Technical University**

- ELK342 / ELK342E: Power Electronics Laboratory (Spring 2025)
- ELK431 / ELK431E: Electrical Machines Laboratory (Fall 2025)

Course Assistantships, Istanbul Technical University

- ELK488E: Electric Drive Systems (Spring 2025)
- ELK453E: Industrial Applications of Power Electronics (Spring 2025)
- ELK334E: Design of Power Electronic Circuits (Fall 2025)
- ELK331E: Power Electronic Circuits (Fall 2025)

Publications

- **Serkan Burak Örs, Sila Kara, Batuhan Akkova, Berk Hızarcı, and others**, "Crewed Orbit to Venus: A Fully Robotic Exploration Mission," presented at the *AIAA Science and Technology Forum and Exposition (AIAA SciTech 2025)*, Orlando, Florida, USA, January 6–10, 2025. DOI: `https://doi.org/10.2514/6.2025-2390`. (Co-author)

References

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