

Dilsad Er

Doctoral Researcher

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I am a doctoral researcher, expected to graduate in Fall 2026. My research focuses on communication-efficient **distributed learning** techniques, federated learning and the use of **systems-theoretic approaches for analysis**. See *Publications*.

Education

- PhD Computer Science** [University of Tübingen](#) **Tübingen, Germany** 10/2022 - present
Max Planck Institute for Intelligent Systems - Learning and Dynamical Systems Group
- MSc Electrical and Electronics Engineering** [METU](#) **Ankara, Turkey** 09/2019 - 06/2022
Control Area (3.50/4.0) Thesis: *Stochastic Analysis and Adaptive Control Studies in Legged Systems*
- BSc Computer Engineering** [METU](#) **Ankara, Turkey** 09/2016 - 06/2019
Information Systems Minor
- BSc Electrical and Electronics Engineering** [METU](#) **Ankara, Turkey** 09/2014 - 06/2019
Control Area (3.74/4.0) Project: *Teleoperated Hockey Player Robot* controlled via a 3G Cellular Data Network.

Professional Experience

- Doctoral Researcher** [Max Planck Institute for Intelligent Systems](#) **Tübingen, Germany** 10/2022 - present
▪ Learning and Dynamical Systems Group under the supervision of Michael Mühlebach, Ph.D.
▪ See Supervised Projects and Publications below.
- R&D Operations Assistant Specialist** [Turk Telekom Inc.](#) **Ankara, Turkey** 10/2019 - 09/2022
▪ Participated as a Fellow Researcher in the 5G and Beyond Joint Graduate Support Programme coordinated by the Information and Communication Technologies Authority.
- Undergraduate Student Assistant** [METU](#) **Ankara, Turkey** 02/2019 - 05/2019
▪ Assisted in teaching and research activities for the EE302 Feedback Systems course.
- Intern Researcher** [DAI Labor, TU Berlin](#) **Berlin, Germany** 06/2018 - 09/2018
▪ Implementation of the Bayesian Policy Reuse algorithm for Robot Decision-Making during their human collaboration and integration with ROS environment for an assembly line of a smart factory as a use-case in Industry 4.0 project; CHARIOT.
▪ Under the supervision of Orhan Can Gorur, Ph.D. **Contributed to:** [AAMAS'19] [J. Hum.-Robot Interact.'23]
- Intern Engineer** [ISSD Electronics, METU Technopolis](#) **Ankara, Turkey** 07 - 08/2015, 08 - 09/2017
▪ Coordinated maintenance schedules and developed troubleshooting documentation for smart traffic solutions.
▪ Focused on Image Processing, Object and Shape Detection Algorithms, and Optical Character Recognition.

Supervised Projects

- Teaching Machine Learning with Lego** By: *Viacheslav Sydora* 10/2024 - 04/2025
▪ Developed a machine learning tutorial for teenagers that can be implemented with LEGO kits available on [Youtube playlist](#) and [course website](#). The course took place at the KI Makerspace Tübingen.
- FedBack: Controlling Communication in Federated Learning** By: *Michael Cummins, MSc* 10/2023 - 04/2024
▪ Improved communication efficiency in federated learning by *FedBack* using a control theoretic approach.
▪ Awarded the Collen Prize for best master thesis by Trinity College Dublin. Published at L4DC 2025.

Leadership & Organization

- Co-organizer** [DynaFront Workshop at NeurIPS 2025](#) **San Diego, USA** 12/2025
▪ Co-organizer of DynaFront: Dynamics at the Frontiers of Optimization, Sampling, and Games Workshop
- Communications Chair** [Tübingen Women in Machine Learning \(TWiML\)](#) **Tübingen, Germany** 01/2024 - present
▪ Founding member responsible for managing event communications, correspondence, and visual materials.
▪ Organized three local workshops with 300+ participants. (March & October 2024, March 2025)
- Communications Support** [Soapbox Science Tübingen](#) **Tübingen, Germany** 07/2025
▪ Assisting with outreach and communication efforts to promote women in STEM through public engagement events.
- Sponsorship Committee Member** [METU Robotics Club](#) **Ankara, Turkey** 09/2016 - 04/2018
▪ Organized METU Robotics Days, one of Turkey's largest student-led robotics events, with 5000+ participants.
▪ Chaired the Innovation category for two years, overseeing competition design and participant support.

Publications

- [1] **G. D. Er** and M. Muehlebach, *Unifying Distributed Optimization, Algorithmic Stability, and Privacy-Preserving Learning through Converse Lyapunov Theory*, NeurIPS2025 Workshop: Dynamics at the Frontiers of Optimization, Sampling, and Games, San Diego, USA
- [2] **G. D. Er**, S. Trimpe and M. Muehlebach, *Distributed Event-Based Learning via ADMM*, 2025, 42nd International Conference on Machine Learning (ICML)
- [3] M. Cummins, **G. D. Er**, and M. Muehlebach, *Controlling Participation in Federated Learning with Feedback*, 2025, 7th Annual Learning for Dynamics and Control Conference (L4DC)
- [4] **G. D. Er** and M. Muehlebach, *Event-Based Federated Q-Learning*, ICML2024 Workshop: Foundations of Reinforcement Learning and Control, Vienna, Austria
- [5] **G. D. Er**, S. Trimpe and M. Muehlebach, *A Systems-Theoretic Approach to Event-Based Distributed Learning*, 2024, Symposium on Systems Theory in Data and Optimization, Stuttgart, Germany
- [6] **G. D. Er** and M. M. Ankarali, *Stochastic Stability Analysis of Legged Locomotion Using Unscented Transformation*, 2023, Bioinspiration & Biomimetics Journal
- [7] **G. D. Er**, *Stochastic Analysis and Adaptive Control Studies in Legged Systems*, 2022, Master Thesis
- [8] **G. D. Er** and M. M. Ankarali, *Adaptive Control of Underactuated Planar Hexapod*, IEEE RAS/EMBS Int. Conf. for Biomedical Robotics and Biomechatronics (BioRob), 2022, Seoul, Korea
- [9] O. K. Karagoz, I. Sever, **G. D. Er**, U. Saranlı and M. M. Ankarali, *Characterization of fixed points of spring-mass model with a body*, 2020, IEEE Signal Processing and Communications Applications Conf., Gaziantep, Turkey

Awards and Achievements

- TUBITAK 2224-A** 2022
- Support program for participation in scientific activities abroad from Scientific and Technical Research Council of Turkey
- TUBITAK 2210 Scholarship** 2020 - 2021
- Scholarship from Scientific and Technical Research Council of Turkey
- DAAD Scholarship** 2017
- For international students and graduates, awarded by German Academic Exchange Service, Humboldt University - German Language Academy summer course in Berlin.
- B.S. High Achievement Scholarship and "The First Hundred" Scholarship** 2014 - 2019
- Awarded by the Middle East Technical University and Turkish Government
- Given to those who rank in the first 100 among 2 million students in the nationwide university entrance exam
- Isbank Golden Youth Award** 2014
- Granted for outstanding performance in the national university entrance exam
- Ranked 20th (first-stage, YGS) and 9th (second-stage, LYS) at the national university entrance exam** 2014
- Among two million high school seniors in Turkey, 2014.

Languages

English [Advanced] - C1 (TOEFL: 108/120) **German** [Intermediate] - B1 (94% - TELC-B1) **Turkish** [Native]

Technical Skills

- MATLAB, Python** - Proficient, used almost for all BSc/MSc courses listed above, also all my simulation environments related to my MSc studies
- C, C++** - used in C Programming and Data Structures Courses
- SQL** - used in Database Management and File Structures course
- ROS** - used for Human Robot Interaction Project in DAI Labor together with Python
- Arduino, Raspberry Pi** - used in Teleoperated Hockey Player Robot project, Feedback Systems, Process Control and other small course projects during BSc.