

ABDULLAH SAYDEMİR

M.Sc. Computer Science

 Turkish

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 <https://saydemr.github.io>

SUMMARY

I have recently completed my master's degree in computer science with a focus on machine learning and high performance computing. I am actively seeking a high-impact research role.

EDUCATION

Munich, Germany 10/2022 - 08/2025	Technical University of Munich (TUM) M.Sc. Computer Science
Istanbul, Türkiye 09/2017 - 08/2022	Ozyegin University B.Sc. Computer Science
Oregon, USA 03/2021 - 07/2021	Oregon State University Exchange Semester

LANGUAGE

English: Advanced (C2)
German: Pre-intermediate (A2)
Turkish: Native

SKILLS

Programming Languages: Python, C++, Kotlin/Java
ML / DL: PyTorch, Jax, PyTorch Geometric, Lightning
NLP: LangChain, HuggingFace Transformers
CV: OpenCV, FFmpeg
Other: wandb, uv, ruff, Docker, Git, Unix systems, Shell, Slurm, \LaTeX

RELEVANT EXPERIENCE

Munich, Germany 05/2025 - 10/2025	BMW Group Intern - Generative Modeling <ul style="list-style-type: none">Benchmarked LLMs and vision-language models (VLMs) to enhance performance of the conversational car assistant systems and submitted the results as a journal paper.Developed software to automatically collect, synchronize, and annotate multi-modal data leveraging computer vision, audio analysis techniques, and VLMs.
Munich, Germany 10/2024 - 08/2025	Data Analytics and Machine Learning Group, TUM Master's Thesis - Time Series Modeling <ul style="list-style-type: none">Developed an uncertainty-aware state-space model by incorporating regularization terms into the update equations to handle noisy environments, with parts of the results published at ICML 2025.Enhanced model robustness by analyzing the effects of various noising schemes and random noise distributions to improve performance in diverse conditions.
10/2023 - 09/2024	Research Assistant - Generative Modeling for Turbulent Flows <ul style="list-style-type: none">Developed a physics-informed generative model for 4D turbulent flows, ensuring realistic outputs, and published findings at the AI4Science workshop at ICML 2024.Parallelized training across dozens of GPUs using data parallelism and advanced sharding techniques.
Istanbul, Türkiye 09/2021 - 08/2022	Artificial Intelligence Lab, Ozyegin University Bachelor's Thesis - Essential Protein Prediction using GNNs <ul style="list-style-type: none">Enhanced diffusion-based GNNs by integrating protein-protein interaction (PPI) data, gene expressions, and subcellular localization to identify proteins involved in cellular regulation.Developed a score-driven graph rewiring method to remove ghost edges in the PPI network, reducing noise and optimizing message passing efficiency.

SELECTED PUBLICATIONS

Full list: <https://scholar.google.com/citations?user=3JKTgBYAAAAJ>

- M. Lienen, **A. Saydemir** and S. Gunnemann. "UnHiPPO: Uncertainty-aware Initialization for State Space Models", 42nd ICML, 2025. Available from: <https://doi.org/10.48550/arXiv.2506.05065>.
- A. Saydemir**, M. Lienen, and S. Gunnemann. "Unfolding Time: Generative Modeling for Turbulent Flows in 4D", AI4Science Workshop, 41st ICML, 2024. Available from: <https://doi.org/10.48550/arXiv.2406.11390>

PROJECTS

Munich, Germany 10/2023 – 03/2024	Data-Driven Models for Lattice-Boltzmann Collision Operators Chair of Aerodynamics and Fluid Mechanics, TUM <ul style="list-style-type: none">Developed neural collision operators that can replace classical single/multi relaxation time collision operators with Fourier Neural Operators (FNOs).
Munich, Germany 03/2023 – 09/2023	Non-Conventional Graph Laplacians Data Analytics and Machine Learning Group, TUM <ul style="list-style-type: none">Integrated graph Laplacians into spectral GNNs and tested their effectiveness on both homogeneous and heterogeneous graph datasets to improve structural information capture and model robustness.
Istanbul, Turkiye 03/2021 – 08/2022	Genetic Algorithms and Heuristics Software Engineering Lab, Ozyegin University <ul style="list-style-type: none">Developed non-gradient optimization methods using genetic algorithms and heuristics to improve software architecture recovery.Published one journal and two conference papers.
Istanbul, Turkiye 01/2022 – 02/2022	Drug Repurposing for Cancer Treatment Sezerman Lab, Acibadem University <ul style="list-style-type: none">Developed a drug scoring model that integrates tissue-specific GTEx data, gene essentiality, and PPI network topology to repurpose drugs for lung adenocarcinoma, breast cancer, and kidney cancer.

AWARDS & AFFILIATIONS

Munich, Germany 09/2024 – Present	Member TUM: Young Academy	Istanbul, Turkiye 09/2018 – 08/2022	Merit Scholarship Istanbul Chamber of Industry
Izmir, Turkiye 2021	Best Paper Award 15th Turkish National Software Engineering Symposium	Istanbul, Turkiye 09/2017 – 08/2022	Full Merit Scholarship Ozyegin University

CERTIFICATES

Online 06/2022	Vienna Scientific Cluster, EuroCC, NVIDIA AI for Science <ul style="list-style-type: none">Gained hands-on experience developing deep learning models for scientific computing and physical systems governed by differential equations, with a focus on advanced methods like Physics-Informed Neural Networks (PINNs), operator learning, and tools such as NVIDIA PhysicsNemo (Modulus).
05/2022	Multi-GPU Programming <ul style="list-style-type: none">Learned techniques to scale applications across multiple GPUs and nodes, using profiling tools for root-cause analysis and performance optimization, and leveraging NVIDIA libraries and communication topologies to improve multi-GPU efficiency.

VOLUNTEER WORK

Online 02/2023 - 06/2023	Editorial Contributor Speech and Language Processing Book, 3rd Edition <ul style="list-style-type: none">Corrected calculations, typographical errors, and conceptual mistakes in 3rd edition of Stanford NLP book by Prof. Jurafsky and Prof. Martin.
Munich, Germany 02/2023 – 03/2023	Volunteer in Post-Disaster Aid Team Turkish-German Friendship Association <ul style="list-style-type: none">Collected, classified, and packaged medical aid, hygiene products, childcare kits, food, baby formula, batteries, generators, and other first response items to be sent to Pazarcik, a town in the epicenter of the two major earthquakes that hit southern Turkiye.

WORK EXPERIENCE

Remote, Turkiye 03/2022 – 03/2023	Datart LLC & Komatsu LTD Software Engineer - Data Analysis and Optimization <ul style="list-style-type: none">Developed an engine to estimate the fuel level of haul trucks and optimize the refueling tasks to minimize the congestion on the roads and refueling facilities.
02/2022 – 03/2022	Intern - Data Analysis and Optimization <ul style="list-style-type: none">Developed a generic, end-to-end system for stock-price prediction of valuable metals.Pruned and imputed available time series data for technical analysis to be used in trading decisions.