# Mert Sonmezer

*Research interests: retrieval-augmented generation, generative models, LLMs for scientific and medical applications*

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## Education

**Middle East Technical University**, Ankara, Turkey — *Oct 2020 – Jun 2026 (Expected)*
*BSc in Computer Engineering* · GPA: 3.71/4.0 · *Most Innovative Research Award*

## Publications

- **Sonmezer, M.**, Vasylechko, S., Atasoy, D., Ertekin, S. & Kurugol, S. WristMIR: Coarse-to-Fine Region-Aware Retrieval of Pediatric Wrist Radiographs with Radiology Report-Driven Learning. *Medical Imaging with Deep Learning* (**MIDL**), 2026.
- **Sonmezer, M.**, Zheng, M. & Yanardag, P. LoRAverse: A Submodular Framework to Retrieve Diverse Adapters for Diffusion Models. *IEEE/CVF International Conference on Computer Vision* (**ICCV**), 2025.
- **Sonmezer, M.** & Ertekin, S. CANet: ChronoAdaptive Network for Enhanced Long-Term Time Series Forecasting under Non-Stationarity. *Neural Networks*, 197:108495, 2026. doi:10.1016/j.neunet.2025.108495

## Research Experience

**Harvard Medical School** – QUIN Research Group, Boston Children's Hospital — *Boston, MA, USA*
*Research Intern, advised by Dr. Sila Kurugol* — *Jul 2025 – Sep 2025*

- Built a retrieval-augmented, region-aware medical CLIP pipeline for pediatric wrist-fracture detection, learning fine-grained anatomical alignment from paired radiographs and radiology reports; resulted in first-author MIDL'26 paper.

**Virginia Tech** – Generative Modeling Laboratory (GEMLAB) — *Blacksburg, VA, USA*
*Research Intern, advised by Dr. Pinar Yanardag* — *Nov 2024 – Feb 2025*

- Designed a submodular LoRA-selection algorithm for diverse text-to-image generation, formulating diversity-quality trade-offs as a coverage objective over a large adapter pool; resulted in first-author ICCV'25 paper.

**METU–DTX** – AI & Big Data Analytics Laboratory — *Ankara, Turkey*
*Research Intern, advised by Dr. Seyda Ertekin* — *Jun 2024 – Nov 2024*

- Proposed a lightweight CNN architecture and a novel normalization framework that mitigates over-stationarization in non-stationary long-horizon forecasting; resulted in first-author paper in *Neural Networks*.

## Industry Experience

**Neural Bridge** — *New York, NY, USA*
*AI Research Engineer, Part-Time & Remote* — *Sep 2025 – Present*

- Developing an LLM-based foundation model for economic analysis, combining domain adaptation with reinforcement learning.

*AI Engineer, Part-Time & Remote* — *Sep 2023 – Oct 2024*

- Built user-programmable, LLM-based multi-agent systems and an LLM-powered synthetic data synthesizer to improve agents' capabilities.

*AI Engineer Intern, Remote* — *Jun 2023 – Sep 2023*

- Fine-tuned Falcon, Llama-2, and GPT-4 for context–question–answer tasks, releasing them as the Neural Bridge RAGO model family on Hugging Face; created the Neural Bridge RAG datasets for retrieval-augmented generation benchmarking.

## Skills

**Programming:** Python, C++, Java, SQL
**ML / DL:** PyTorch, Hugging Face Transformers & Diffusers, scikit-learn
**LLM Tooling:** LangChain, AutoGen, DSPy
**Infrastructure:** Google Cloud Platform (GCP), Git, Docker
**Languages:** English (fluent), Turkish (native)
**Activities:** Technical Team Member, METU AI Society (Oct 2022 – Dec 2023)