Sarper Yurtseven

EDUCATION

Mathematical Engineering, *Master of Science*
Politecnico di Milano 2024 — Present
▶ with a focus on **Computational Science and Learning**

Mathematics, *Bachelor of Science*
Yildiz Technical University 2020 — 2024
▶ In my thesis, I have demonstrated occurrence of **Hopf bifurcation** for a dynamical system by **linearizing** the system around its equilibrium point.
▶ **Peer consultant** for the department of Mathematics.

ACADEMIC EXPERIENCE

Research Intern @Topological Machine Learning Group, UB Summer 2024
University of Barcelona

- Worked on **Cellular Transformers** (Rubén, et al.)
- Contributed to the project by implementing attention mechanisms that works on $\approx$ linear time. I used to mimic methods of the already known attention mechanism such as *Cosformer, Linformer, Performer*, and *Clustered Attention.*

Research Intern @Rehg Lab Summer 2023
Georgia Institute of Technology Remote

- Worked on an approach for **image editing** using latent (h-)space in **diffusion models**, implementing a "Delta-h" generator to change continuous attributes (e.g. azimuth, elevation) without retraining the model. The project provided insight into the efficient control of nonlinear transformations.

Research Intern @Astromusers Sep 2022 — Mar 2023
Princeton University Remote

- Worked on methods to enhance photometric legacy in space telescopes through **unsupervised** and **supervised** learning methods, focusing on **exoplanet detection** using JWST coronagraphic data. Built and open-sourced an end-to-end pipeline

PROFESSIONAL EXPERIENCE

Open Source Contributor June 2024 — Aug 2024
Google Summer of Code 2024

- Developed an end-to-end pipeline that trains **SinGAN-Seg**, **DDIM**, and **VAE** models for synthetic image generation, along with **MedSAM** and **U-Net** for segmentation. Also created a GUI enabling dataset selection, model-based image generation, and segmentation.

Data Analysis Intern Jan 2022 — March 2022
ASSIA, Inc. Remote

- Analyzed **smart house data** to reveal significant correlations among users, devices, and their interactions. Combined **advanced data analysis** and visualization methods with **unsupervised techniques** (K-means clustering, PCA) to expose hidden patterns.

PUBLICATIONS

Journal & Conference Papers

- Barsbey M., Ballester R., Demir A., Casacuberta C., Hernández-García P., Pujol-Perich D., **Yurtseven S.**, Escalera S., Battiloro C., Hajij M., Birdal T., *Higher-Order Molecular Learning: The Cellular Transformer*, **ICLR 2025 Workshop on GEM**
- Nemeti, E., **Yurtseven, S.**, Kuo, B., Napadow, V., Sclocco, R. and Mahmoudi, B., 2025. *Sa2056: An Automated Segmentation Pipeline for Quantifying Gastric Motility in Humans Using 4D Cine Magnetic Resonance Imaging* **Gastroenterology, 2025 - Elsevier**

Poster Submissions

- **Yurtseven S.**, Ballester R., *Attending Topological Spaces: Introduction to Cellular Transformers*, **MENAML**, 2025
- Kara O., **Yurtseven S.**, Yesiltepe H., Stojanov S., Rehg J, *Analysis of Controllability and Fairness in Diffusion Models*, **ICVSS**, 2023

VOLUNTEER WORK

inzva Istanbul, Turkey
AI Team Member 2022 — Present

- At inzva, I **communicate** and **share scientific knowledge** across diverse audiences. As part of the AI Team, I co-organized **Google ML Bootcamp 2023 Turkey** and **Google ML Bootcamp 2022 Turkey**, each spanning 6-month modules and achieving an approximately **70%** graduation rate both years. I also **led** the development of a **deep learning lecture series**, designing a cutting-edge curriculum featuring **state-of-the-art** techniques and models. **link**

Matematik Dunyasi Archive Team Istanbul, Turkey
Writer and Editor September 2021 — January 2024

- Volunteered with the archive team for *Matematik Dunyasi*, a popular mathematics journal of the **Turkish Mathematical Society**, where I transcribed older issues (1991–2001) into LaTeX format. This effort makes historical mathematical content freely accessible on the journal's website, **matematikdunyasi.com**, reaching a broader audience.

WORKSHOPS/INVITED TALKS

- United Nations Development Programme SGD AI LAB 2023
- Get Your Hands Dirt in AI 2022
- Morethan101 Workshops 2022