Sarper Yurtseven

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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. link
▶ **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 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. Although the project ended inconclusively, it provided insight into the efficient control of nonlinear transformations. ▶**results**

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 ▶ **AI-Boosted-Coronagraphy**

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. ▶ **repository**

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 & SUBMISSIONS

Journal & Conference Papers & Poster Submissions

- Barsbey M., Ballester R., Demir A., Casacuberta C., Hernández-García P., Pujol-Perich D., **Yurtseven S.**, Escalera S., Battiloro C., Hajij M., Birdal T., *The Cellular Transformer: Modeling Molecule Structures with Higher-Order Attention*, **ICML**, 2025, (**Under Submission**)

- **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