

# Sarper Yurtseven



## EDUCATION

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### 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

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### 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

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### 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

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### 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

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inzva

AI Team Member

Istanbul, Turkey

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. 🔄

Matematik Dunyasi Archive Team

Writer and Editor

Istanbul, Turkey

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 L<sup>A</sup>T<sub>E</sub>X format. This effort makes historical mathematical content freely accessible on the journal’s website, **matematikdunyasi.com** 📅, reaching a broader audience.

## WORKSHOPS/INVITED TALKS

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