Sarper Yurtseven

Istanbul, Turkey
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RESEARCH INTERESTS

Geometry and Topology, Computational Learning, Deep Learning

EDUCATION

Politecnico di Milano, Milano, Italia — Sep 2024 — Present
Mathematical Engineering - Computational Science and Learning, MSc

Yildiz Technical University, Istanbul, Turkey — 2020 — 2024
Mathematics, BSc — Cumulative GPA: 3.22/4
Thesis Title: Hopf Bifurcation and Stability Analysis for Continuous Neural Network Model with Distributed Delay, link
Peer Consultant for the department of Mathematics

Taksim Koleji (High School), Istanbul, Turkey — 2015 — 2019
Science and Mathematics — Cumulative GPA: 95/100
Notable Events and Activities: Top student of the school, Chess Club (Ranked **1st** (2019) and **2nd** (2018) at school tournament)

ACADEMIC EXPERIENCE

University of Barcelona
Undergraduate Researcher @Topological Machine Learning Group, UB — Summer 2024

- Conducting research on **Cellular Transformers** (Rubén, et al.) which is a type of topological deep learning model that operates on Cell Complexes.
- Implemented **linear time attention** mechanism using the kernel trick.

Georgia Institute of Technology — Remote
Undergraduate Researcher @Rehg Lab direct supervision of a PhD student of James Rehg, Ozgur Kara — Summer 2023

- Conducted research on **image editing** through interpolating on latent space to change non-linear attributes (eg. azimuth, altitude, brightness) and **novel view synthesis** with **diffusion models.** You can visit **Universal Controller for 3D Non-linear attributes on h-space of Diffusion Models**

Princeton University — Remote
Undergraduate Researcher @Astromusers advised by Asst. Prof. Tansu Daylan — Sep 2022 — Mar 2023

- Conducted research on how to enhance photometric legacy over space telescopes using unsupervised deep learning techniques (**VAEs and its derivations**). Particularly, worked on **PSF modeling** and **exoplanet detection** using JWST's coronagraphic data.
- Built and designed a pipeline for astronomical research using deep learning. You can visit **AI-Boosted-Coronagraphy**

PROFESSIONAL EXPERIENCE

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

- Built a pipeline capable of training SinGAN-Seg, DDIM, and vanilla VAE to generate synthetic images. Additionally, MedSAM and U-Net-based models are implemented to perform segmentation.
- Developed a GUI with features to generate synthetic images using the trained VAEs, GANs, and DDIM models with a chosen dataset and perform segmentation using U-Net-based models. You can visit repo

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

- Engaged in analyzing data from smart homes, with a focus on uncovering significant correlations among users, devices, and their interactions. My analytical approach involved employing **data analysis** tools, **visualization techniques** and employing **unsupervised techniques** such as **K-means clustering** and **principal component analysis**.

PUBLICATIONS & SUBMISSIONS

Journal paper

- **Yurtseven S.**, Kurtkaya B., Daylan T., AI-Boosted Coronagraphing Imaging with JWST (**In-Progress)**

Workshops & Poster Submissions

- 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

- inzva gives me the opportunity to **communicate** and **disseminate science** to people who are from various areas.
- We organized and coordinated **Google ML Bootcamp 2023 Turkey** and **Google ML Bootcamp 2022 Turkey** as inzva AI Team. My role involves offering guidance and mentorship to ensure the successful graduation of participants for each module, with each module spanning a duration of **6 months**.
- I **lead** the development of a new **deep learning lecture series**, crafting a cutting-edge syllabus that incorporates **state-of-the-art** techniques and models.
- I instruct on MLPs and their structure, covering fundamental concepts of neural networks and elucidating the mathematical principles that underlie their functioning. **content link**

Matematik Dunyasi Archive Team Istanbul, Turkey
Writer and Editor 2021 — Present

- Matematik Dunyasi, a journal of popular mathematics, is under the ownership of the **Turkish Mathematical Society**. The archive team is currently transcribing the older issues (1991-2001) into LaTeX format to make them accessible on the website, allowing everyone to read them. For more information, you can visit **matematikdunyasi.com**.

WORKSHOPS/INVITED TALKS

- **United Nations Development Programme SGD AI LAB** 2023, Remote
- **Get Your Hands Dirt in AI** 2022, Istanbul, Turkey
- **Morethan101 Workshops** 2022, Istanbul, Turkey