Bariscan Kurtkaya

CONTACT

Email: bariscankurtkaya@gmail.com
Personal Webpage: bariscankurtkaya.github.io
GitHub: bariscankurtkaya

INTEREST

Generative models, 2D & 3D computer vision, self-supervised representation learning

EDUCATION

Koc University, MSc in Computer Science and Engineering, Istanbul, Turkey — **2023 Fall-2025**
Ranked #1 University in Turkey (QS Rankings 2023) — **Currently 4.00/4.00**
Awarded Koc AI Fellowship (1% Acceptance Rate)
Research in 2D & 3D generation and editing with Prof. Yucel Yemez

Yildiz Technical University, BSc in Electronics and Communication Engineering, Istanbul, Turkey — **2017-2023**
Research on classifying partially distorted data by utilizing Masked AutoEncoder (MAE) — **with High Honors**
architecture with Assoc. Prof. Nihan Kahraman

PUBLICATIONS - PREPRINTS

[1] ***RAVE: Randomized Noise Shuffling for Fast and Consistent Video Editing with Diffusion Models***, <u>Under Submission</u>, 2024 [Paper] [Code] [Website]
Ozgur Kara*, **Bariscan Kurtkaya***, Hidir Yesiltepe, James M. Rehg, Pinar Yanardag

[2] ***Deep learning-based driver assistance system***, Electrica Journal, 23(3), 607-618, 2023. [Paper] [Code]
<u>**Bariscan Kurtkaya**</u>, Arda Tezcan, Murat Taskiran

RESEARCH EXPERIENCE

Virginia Tech, GemLab VT, Visiting Researcher — **2023 Fall - Present**
Supervised by Asst. Prof. Pinar Yanardag
- Conducted research on a novel, training-free, zero-shot video editing framework that integrates with pre-trained text-to-image diffusion models. (In submission)
- Our proposed method was evaluated as the state-of-the-art method in both qualitative and quantitative evaluations for editing while tackling the shape morphing problem which is not addressed in previous approaches.
- Focusing on image manipulation and fairness with diffusion models.

Georgia Institute of Technology, Rehg Lab, Visiting Researcher — **2023 Fall**
Supervised by Prof. James M. Rehg
- Proposed novel lightweight image editing approach to harness the power of pre-trained text-to-image latent diffusion models to overcome inconsistency and incoherency in video editing. (In submission)
- Constructed a novel and biggest dataset in the literature for a more comprehensive evaluation of video editing which includes various types of motions and editing prompts.
- The proposed method's space was in the top trending spaces in Hugging Face.

Princeton University & Wash. U. St. Louis, McDonnell Center, Researcher — **2022 Fall - 2024 Spring**
Supervised by Asst. Prof. Tansu Daylan
- Conducting research on images produced by **James Webb Space Telescope**, NIRCAM, and MIRI instruments with coronograph filter as well as performing classification and error measuring.
- Trained a deep learning model in a self-supervised manner to classify observations from the JWST.
- Developed a pipeline to create a novel dataset by calibrating raw observations of JWST.
- Manuscript of the work mostly done and it is under preparation for submission.

University of Milan, Laboratory of Applied Intelligent Systems , Visiting Research Intern — **2022 Summer**
Supervised by Prof. Alberto Borghese
- Did research on the explainability of '**Capsule Networks**' with the aim of improving the feature representation of images by understanding the 'dynamic routing' notion and incorporating it with CNNs and Vision Transformers.
- Did presentation about Capsule Networks to faculty members and Ph.D. students at the University Of Milan.

Yildiz Technical University, MeDaLab , Undergraduate Research Assistant — **2021 Fall - 2022 Spring**
Supervised by Assoc. Prof. Nihan Kahraman & Asst. Prof. Murat Taskiran
- Lead the research on **Driver Assistance System** which won a grant from **Scientific and Technological Research Council of Turkey (TUBITAK)**, aiming to improve night driving safety with object detection and lane detection with deep learning and image processing.
- The paper, '**Deep Learning Based Driver Assistance System**' was accepted from 'Electrica Journal'.

TEACHING EXPERIENCE & TALKS	**Koc University** - Graduate Teaching Assistant	**2023 Fall**

TEACHING EXPERIENCE & TALKS

Koc University - Graduate Teaching Assistant — **2023 Fall**
- COMP 106 - Discrete Mathematics for Computer Science and Engineering

Akbank MultiGroup - Speaker — **2023 Spring**
- I have been invited to give an advanced-level talk on deep learning based object detection models at the Akbank MultiGroup MoreThan101 seminar.

Tech Istanbul - Istanbul Metropolitan Municipality - Speaker — **2022 Fall**
- I volunteered to give a lecture to low income individuals on cutting edge deep learning algorithms to give them leg up in the industry.

University of Milan - Visiting Research Intern — **2022 Summer**
- Gave a talk about Capsule Networks to faculty and graduate students in the computer science department at the University of Milan in a Seminar.

PROFESSIONAL EXPERIENCE

Ollang Media Technologies, AI Research and Development Engineer — **2021-2022**
- Conducted research and implementations on Ollang's Text-To-Speech and Transformer-based machine translation technology.
- Was in charge of implementing the company's text-to-speech and **transformer-based** NLP models. Besides, I represented the Ollang AI department to **Microsoft Turkey GM, CTO, and Customer Success Lead**.
- Established the research department for machine translation, AI dubbing, and noise cancellation research. Through this, Ollang becomes able to support consumers in more than 60 languages.

AGC, Software Engineer Intern — **2020 Summer**
- Undertook the unmasked people detection project, which includes Object Detection algorithms, due to the Covid-19 spread.
- Developed the unmasked people detection project due to the Covid-19 spread. Developed the project with **YOLO** algorithm core to get real-time results.
- Object detection project had been used in 5 facilities to report HR for any violation.

Yıldız Technical University IEEE CAS Team, Software Team Member — **2018 - 2019**
- Contributed to the Semi-Autonomous Underwater Robot implementing the software for solving several computer vision tasks.
- Developed the project by implementing the software for solving several computer vision tasks, including text recognition and object localization from the real-time video stream.
- Awarded several times in national and international project competitions organized by scientific organizations, including **TUBITAK, Turkish Defense, and MATE-ROV competition from the USA**.

SCHOLARSHIPS
- Koc AI Fellowship (1% Acceptance Rate) — **2023-2025**
- 2209 TUBITAK[1] Research Project Grant Holder — **2022**

ACHIEVEMENTS
- **Awarded 1ˢᵗ, and 3ʳᵈ place** as in the US-based MateRov Semi-autonomous Underwater Systems competition organized under the sponsorship of NSF, in consecutive years.
- **Awarded 4ᵗʰ place** in the Undersecretariat of Defense Industry award in the Underwater Systems category.
- **Awarded 3ʳᵈ place** in the Teknofest Turkiye award in the Underwater Systems category.
- **Hugging Face Ambassador**
- **Microsoft Ambassador**
- **High Honors from Yildiz Technical University**
- **Top 0.25% among 150 thousand** - Turkish National Postgraduate Entrance Exam and Academics
- **Top 1% among 2 million** - Turkish National University Entrance Exam

EXTRA CURRICULAR
- Competed in Berlin Marathon, Barcelona Half Marathon, Istanbul Marathon as fully-sponsored Nike Pacer Athlete
- Runner athlete sponsored by Adidas
- Pro volleyball player in Turkey Volleyball League
- Volleyball player in Yildiz Technical University Team
- Amateur performer (covered by top platforms such as Tepkikolik Channel - 2.54 Million Subscribers)

LANGUAGES
- Turkish - Native
- English - TOEFL 92

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[1]The Scientific and Technological Research Council of Turkey