Farrin Marouf Sofian

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Education

University of California, Irvine 2023 – Present
M.S. Computer Science *California, USA*

Koç University 2019 – 2023
B.S. Major: Computer Engineering | Minor: Mathematics *Istanbul, Turkey*

Honors: Vehbi Koç Scholars for outstanding academic performance for 4+ semesters.

Research Experience

Turkish Grammatical Error Correction October, 2022 – 2023
Undergraduate Research Assistant, NLP Lab *Koç University*

- Conducted extensive literature review on grammatical error correction for multiple languages, to see the best options for Turkish under the supervision of Prof. Gözde Gül Şahin.
- Training and evaluating multiple baselines and SOTA models for grammatical error connection.
- Published in IJCNLP-AACL.

Audio-based Image Editing 2021 – Present
Undergraduate Research Assistant, KUIS AI Lab *Koç University*

- Working with Prof. Aykut Erdem, Prof. Erkut Erdem, and Dr. Duygu Ceylan on audio-image multi-modal domain.
- Fine-tuning unconditional latent diffusion models and GAN-based models on nature and outdoor datasets.
- Investigating and implementing image inversion methods in Stable Diffusion model.
- Experimenting with various audio encoder models such as AudioCLIP and CLAP.
- Researching on the integration of Adapters with Stable Diffusion in multi-modal domain.
- Writing a paper for Spring submission.

Bird Songs 2021 – 2022
Undergraduate Research Assistant, KUIS AI Lab *Koç University*

- Trained transformer-based models on bird songs to detect bird calls in recordings.
- Experimented with self-supervised transformer-based models and CNNs.
- Gathered and modified metadata for 600k bird songs, and applied several pre-processing steps such as sound separation on the recordings.
- Fine-tuned the pre-trained model on 355k bird recordings (400 species) on birds local to Turkey.
- Led a group of 4 students and created Turkey's first audio-based bird identification mobile application called Birds of Istanbul.
- Worked with High Performance Computing (HPC) clusters and contributed on writing a detailed documentation on how to use HPC clusters for graduate students.

Work Experience

Machine Learning Engineer Intern June, 2022 – October, 2022
RadiusAI *Tempe, Arizona, United States*

- Researched and proposed deep learning solutions for camera calibration based on scene geometry.
- Evaluated the effectiveness of deep learning as well as other traditional methods to solve the problem.
- Created the company's first fully automated camera calibration, reducing the company's reliance on expensive annotators.

Software Engineer June, 2021 – September, 2021
Digitopia *Istanbul, Turkey*

- Designed the company's main product for providing marketing analytics for large enterprises.
- Created a dynamic PDF generator from user dashboard results using Handlebars, JavaScript and Node.js.
- Participated in Agile workflow as part of the development team.

Projects

Wallpaper Recommendation October 2022 – December 2022

- Developed a deep learning framework as a course project to recommend and generate similar wallpapers based on users' preference and created a website. Hosted on Vercel: WallPie.
- Experimented with various unsupervised models such as SimCLR and SwAV to extract image representations and calculated similarities.
- Generated new samples based on user feedback and wallpaper interest using latent diffusion model.

Bird Song Re-synthesis and Sound Identification June, 2022 – September, 2022

- Trained different components of the baseline model on speech datasets such as LJSpeech and LibriLight.
- Trained and extracted species' sound embeddings from transformer-based Audio Spectrogram Model.
- Experimented with VQ-VAE and HiFi-GAN models as content encoder and vocoder, respectively.
- Evaluated the model and conducted comparison between the performance of baseline model trained on a speech dataset and the one trained and modified for bird songs.
- Performed extensive literature study to understand and identify the best suitable model for converting voice of a species into another one.

Portfolio Website June, 2020 – August, 2020

- Designed and created a portfolio website to connect with people and provided more detailed explanations on research projects for curious minds.
- Implemented using state-of-the-art frameworks such as Nextjs, Nodejs, React.
- Styled using antd, sass, bootstrap and created animations with Vanta.js and Three.js.

Voluntary Experience

ACM Corporate Relations Team October 2020 – June 2023
Koç University *Istanbul, Turkey*

- Assist in organizing and coordinating hackathons and workshops with various companies.
- Conduct mock interviews and provide guidance to students in their career development.

Undergraduate Teaching Assistant February 2021 – June 2023
Koç University *Istanbul, Turkey*

- **Comp 301** Programming Languages Concepts: Creating lab assignments , projects and quizes, grading them, holding office hours, and assisting students with their homework.
- **Comp 132** Advanced Programming: Assisting students during weekly lab hours, grading assignments, and co-designing and grading a final project.

Publications

• A. Kara, **F. M. Sofian**, A. Y. X. Bond, and G. G. Sahin, "GECTurk: Grammatical Error Correction and Detection Dataset for Turkish" The 13th International Joint Conference on Natural Language Processing and the 3rd Conference of the Asia-Pacific Chapter of the Association for Computational Linguistics (IJCNLP-AACL) 2023.

Specialized Skills

Programming with: Python - Java - Pytorch - TensorFlow - C - JavaScript
Languages: Persian (Native) - English (Fluent) - Turkish (Fluent)