Ozan Karaali

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Experience

TU Munich - Chair of Computer Aided Medical Procedures — Munich, Germany
Master Thesis Student — *01/2023 – 05/2023*

- Authored two novel deep learning SR methods for ultrasound image super-resolution, utilizing PyTorch.
- Achieved significant metric improvements, outperforming the previous state-of-the-art model in PSNR from 33.67 to 35.39 and SSIM from 0.89 to 0.92.

Deutsches Forschungszentrum für Künstliche Intelligenz (DFKI) — Kaiserslautern, Germany
Research Assistant - Werkstudent — *10/2022 – 03/2023*

- Implemented a business rule editor for consistency checking in graph data of building relation maps.
- Enhanced consistency checker of the metis-II by implementing CI/CD pipelines and OOP refactoring.

BMW Group — Munich, Germany
Product Developer - Werkstudent — *09/2021 – 10/2022*

- Project EVOLVE (Research and Development): Enhanced ride-hailing optimization algorithms through parallelization and HPC deployment, improving computational performance. Key contributions to the project ensured critical deadlines and objectives were met, leading to successful completion in compliance with European Union regulations.
- Project GeoCoding QA: Improved geocoding quality by evaluating various metrics across different providers.
- Project Powerpool (Bidirectional Charging): Streamlined error analysis in the Powerpool backend system through the development of a Streamlit and Plotly tool.

TU Munich - Chair of Architectural Informatics — Munich, Germany
Interdisciplinary Project Student — *02/2022 – 08/2022*

- Transitioned the metis-II project "Deep Learning in the Architectural Design Process" from TensorFlow to PyTorch, improving control and simplicity.
- Designed an LSTM/FCNN network to predict design intentions in real-time by a 0.8 F1-macro score on non-shuffled test set, enhancing metis-II's AI framework.

HAVELSAN — Ankara, Turkey
Long-Term Intern — *09/2019 – 01/2020*

- Gained proficiency in neural network basics and image classification using Caffe on a multi-GPU Docker environment and created a Python-interpreting GStreamer filter plugin with C++ for video frame processing and improved a GUI application.

adesso Turkey — Istanbul, Turkey
Intern — *07/2019 – 09/2019*

- Developed iOS applications using Swift and RxSwift and refactored an app from MVC to MVVM architecture using RxSwift and gained understanding of differences between Android and iOS development environments.

HAVELSAN — Ankara, Turkey
Intern — *06/2019 – 07/2019*

- Developed a Python/QT GUI application for video/image processing and began learning frame-by-frame video processing using GStreamer and OpenCV.

ISSD — Ankara, Turkey
Intern — *07/2018 – 09/2018*

- Made a web application for analyzing traffic data collected from Bluetooth, using Flask, Pandas with Python, and React.

Education

Technical University of Munich — Munich, Germany
M.Sc. in Informatics: ***German Grading: 1.9 (1.0 is the best grade)*** — *10/2020 – 05/2023*

- **Area of Specialization:** Computer Vision — Supplemental Areas: Machine Learning, Distributed Systems, and Cloud Computing

Abdullah Gül University — Kayseri, Turkey
B.Sc. in Computer Engineering: ***GPA: 3.68/4.00*** — *09/2016 – 01/2020*

Projects

PixBike | IDP: Pix2Pix model based on implementation of GrowBike | *GitHub*
PiTV | A cross-platform IPTV and STB player client written in Electron, React and Node.js and LevelDB. | *GitHub*
Voxel Carving Using ArUco Markers | Course Project: Reconstructs 3D objects from multiple images | *GitHub*
Kargom Nerede | A parcel tracking application written in React Native and Flask. 10K+ downloads. | *Play Store*
Coordinated Frequency Allocation in Wi-Fi Networks | Heuristic algorithm design for Erasmus+ EPIC | *Report*
YOLOv3-ReCaptcha | A proof of concept Recaptcha solver using YOLOv3. | *GitHub*
Yumak Language | Capstone Project: Highly concurrent and parallel programming language.| *GitHub*
YARCL: Yet Another React Chart Library | 16kB (gzipped) React chart library with SVG. | *GitHub*

Skills

Programming: Python, Rust, NodeJS, C, C++, Java, Kotlin
Frameworks/Libraries: PyTorch, TensorFlow, Keras, Numpy, Pandas, React, Flask, Electron, GStreamer, OpenCV, Streamlit, Plotly, Lightning AI, OpenMPI, QT
Tools/Platforms: Git, Docker, Kubernetes, AWS, GCP, Linux, Windows, MacOS, CI/CD pipelines
Languages: Turkish (Native), English (Fluent), German (Elementary)

Publications

Thesis: Learning-Based Ultrasound Image Super-Resolution - 2023 | *Thesis*

Seminar Presentation: pi-GAN: Periodic Implicit Generative Adversarial Networks for 3D-Aware Image Synthesis - 2021 | *Blog Article*

Why Scene Groups Are Doing Software And Digital Media Piracy? - 2017 | *Blog Article*

Changing Human Perception to Be More Comfortable on Conversation with Robots - 2017 | *Blog Article*