Kadir Göksel GÜNDÜZ

AI Research Engineer

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Bachelor of Engineering & Computer Engineering - 2023

RELEVANT WORK EXPERIENCE

DATA SCIENTIST & LLM ENGINEER
12/2023 - Present

@ Güriş Holding - Ankara

- Conducting exploratory data analysis, feature engineering, model developing and evaluation to optimize performance and ensure robustness for wind turbines of the company.
- Developing a custom LLM model for the company involves tailoring a large language model to meet specific business needs and objectives.
- Designing a comprehensive dashboard for wind turbines capable of showcasing a wide range of turbine attributes.

FOUNDER of UMAI - AUTONOMOUS & SWARM AGRICULTURAL VEHICLES
08/2023 - Present

- Presently spearheading the integration of SLAM and ROS in my ongoing autonomous agricultural vehicle project which is in currently initiative stage in Samsun Teknopark.
- Actively engaging in the task of incorporating LSMs (Liquid State Machine) to elevate computer vision capabilities of my vehicles.

MACHINE LEARNING DEVELOPER
2022 December - 2023 February

@ NECMETTIN ERBAKAN - Konya

- In addition to utilizing Stable Baseline models, worked as both frontend and machine learning developer in the IT department of the university
- Developed facial recognition and person tracking DL models within the faculty. The developed models have been enhanced by DeepSparse and pruning MLOPS processes for regular operational usage.

MACHINE LEARNING INTERN
JULY - SEPTEMBER 2022

@ Arvis Technology - Istanbul

- Excluding the internship period, in December 2023, developed an interface for detecting active voice classification, a raw voice extractor, and a speech-to-text model for the company.
- In internship, within the project team; a classifier model was developed for gender and age classification tasks using time series methods, anomaly detection and signal processing methods.
- TFGAN (Time and Frequency Domain) model has been developed for synthetic voice generation and voice cloning.

COMPUTER VISION INTERN
JUN - SEPTEMBER 2021

@ KARABUK UNIVERSITY

- Contributed the development of computer vision models from scratch, worked on Deep Learning models for Semantic Segmentation and Object Tracking for a ongoing project.
- Developed a "Forward-Forward" method for CNN network which optimizes the model in forward propagation for efficient training.
- Optimized the custom neural network in the "Backbone" section of the classification model's architecture, emphasizing feature selection

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PROFESSIONAL SKILLS & PROJECTS

GAN Networks

- In the undergraduate thesis, research was conducted on Enhanced Super-Resolution Generative Adversarial Networks (ESRGAN) for developing methods to enhance low-resolution images to achieve ultra-high resolution.
- The model was optimized on the architectural side by using genetic algorithms to make it versatile for various applications. Optimized model has been utilized in the competitions I participated in to enhance the resolution of medical images in cases of low model reliability.
- Currently developing a web-based initiative project for the advertising sector using StyleGAN2 Ada in collaboration with peers from my university.

Computer Vision

- A pipeline has been developed to customized CNN architectures, taking into account dataset-specific features, as well as the Backbone and Head sections, using Python, C++, and CUDA with OpenCV and PyTorch.
- Especially for competitions, an interface design has been developed for parallel DICOM processing, quantization, and pruning operation displayer on the GPU using NVIDIA DALI.
- Currently designing my very own large-scale project, an image processing interface similar to YOLO and suitable for global usage. For better accuracy and yield, I'm also developing a hybrid network with CNNs & LSTMs for capturing relationships between classes and inferences.

Natural Language Processing & LLMs

- Conducting research on domain-specific language models with a focus on text comprehension, summarization, and generation.
- Currently leading a project to develop a domain-specific language model tailored for business meetings. This aims to provide concise notes and summaries for my supervisor during meetings, enhancing productivity.
- As the mentor of my high school's TEKNOFEST team for an NLP competition, I'm leading the development of an advanced and simplified transformer model pipeline specifically tailored for the competition.

Reinforcement Learning

- Custom PPO method was implemented alongside the Forward-Forward method with the aim of minimizing the computational cost in Backpropagation.
- In the Unity environment, an industrial robotic arm has been trained through the A2C to assemble parts on a conveyor belt
- Leading my own high school's TEKNOFEST team in the NLP competition, developing an advanced transformer model and

Evolutionary Computation

- A neural network was integrated into a drone swarm in the Gazebo simulation environment while, ROS has been used to enhance coordination and communication between the drones.
- The drone swarm has undergone evolution through evolutionary algorithms, gaining proficiency in both stable flight and aimed to target.

Autoencoder

- In the 2023 Teknofest Healthcare and AI competition, an autoencoder model has been developed to reduce noise in medical images and utilized to improve scores in the competition.