EMRE DEMIR

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OBJECTIVE

After graduating as an engineer, I gained diverse IT industry experience. My passion for Machine Learning led me to pursue a Master's degree in Computer Science at TU Munich, specializing in Deep Learning applications. I thrive on exploration and overcoming challenges, aiming to create impactful work that leaves a lasting impression.

EDUCATION

Master of Computer Science, Technical University of Munich — 2021 - Expected 2023
Bachelor of Computer Science, Anadolu University — 2014 - 2019

SKILLS

- Python, C++, Java, Scala, Rust, Typescript, SQL
- Machine Learning, Deep Learning, Object Detection, Image Segmentation, Large Language Models, Generative AI, Vector Databases, Similarity Search, Federated Learning, HPC, Distributed Machine Learning
- Pytorch, FastAPI, Flask, Flower(Federated Learning), Langchain, Scala Spark, PySpark, Kubernetes, Docker, Airflow, Grafana, MongoDB AWS, Azure, scikit-learn, Numpy, Pandas, Streamlit, Angular, Linux, SLURM, Bash, Git

EXPERIENCE

German Aerospace Agency(DLR) — **Munich, Germany**
Master Thesis Student — May 2023 - Present

- Automated the training, inference and test of hundreds of models on multi GPU HPC setup using Python, Pytorch, Docker SLURM and Linux.
- Created an open-source AutoML Benchmark Dataset from scratch using the Python, Pytorch and NASLib.
- Introduced Hardware Aware Neural Architecture Search for Hyperspectral Computer Vision models to find the Deep Learning models with the highest accuracy and lowest inference latency using Python, Pytorch, NASLib, Docker and SLURM.
- Applied various search methods from graph search methods to evolutionary algorithms using Python and scikit-learn.

Siemens Financial Services — **Munich, Germany**
Data Scientist - Working Student — Dec 2021 - Present

- Developed cash flow prediction Machine Learning models for teams in the United Kingdom and Poland on Cloud, resulting in predictions that outperformed the existing baseline by 70%, using Python, Pytorch, scikit-learn and Microsoft Azure.
- Built an end-to-end Machine Learning pipeline on Azure from data preprocessing to model training, hyperparameter tuning, deployment and inference using Python, Pytorch, Sklear, Numpy and Azure SDK.

- Implemented, tested and analyzed different deep learning models to extract tables and text from PDFs. Using Python, Pytorch, FastAPI.
- Deployed full-stack Machine Learning applications running on Kubernetes using Python, scikit-learn, TypeScript, Angular, Streamlit and FastAPI.

Insider (Unicorn Software Startup) **Istanbul, Türkiye**
Machine Learning Engineer July 2020 - Aug 2021

- Designed and developed a LSTM based new Seq2Seq Word Generation Deep Learning product prototype from scratch using Python and Pytorch on AWS.
- Developed and maintained the automated Data Processing, Feature Engineering and Modeling pipelines on Cloud Infrastructure using Python, Scala scikit-learn, Airflow and Apache Spark.
- Created APIs for Machine Learning Models, built monitoring and data gathering pipelines on AWS using Kinesis, Kinesis Analytics, Lambda, Kubernetes and Grafana.
- Improved team's ML Operations pipeline and Data Processing Orchestration with creating new scripts using Python, Apache Airflow, Kubernetes, Docker, and using AWS products like Codebuild.
- Contributed to development and maintenance of an in-house Auto ML Platform, training more than 1200 models weekly.

Vodafone **Istanbul, Türkiye**
Software Engineer June 2019 - July 2020

- Successfully developed Chaos Engineering tool for Cloud Operations Team. To enhance system performance and reliability, using Red Hat Openshift, Python, and Flask.
- Designed and developed a vulnerability notifier web application using for the Cyber-Security Team. Which effectively manages and tracks inventory of various device types, minimizing security risks and ensuring compliance, using Python, Flask, Gunicorn, and MongoDB.

SELECTED PROJECTS

Neural Architecture Search for Computer Vision: Developed an automated pipeline using AutoML and Hyperparameter Optimization techniques to efficiently train hundreds of Resnet models on HPC. Achieved successful training of over 1200 Deep Learning models.

Federated Learning on Medicine with Diabetes Data: Utilized Python's Flower framework to demonstrate Horizontal Federated Learning. Distributed dataset among 10 clients, trained using FedAvg method, ensuring privacy preservation.

Picky-Rabbit: Implemented the LLM-powered Food Content Information Chatbot, providing detailed information about packaged food contents. Incorporated Similarity Search with LLMs and FAISS database for enhanced responses.

Deep Learning for 2D to 3D Point Correspondence on Non-Textured Objects: Applied cutting-edge Unet-based 6D pose estimation deep learning model to establish successful 2D to 3D feature correspondence on non-textured objects in Computer Vision.