

Cavit Çakır

MACHINE LEARNING ENGINEER

Munich, Germany

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Summary

As a recent Master's graduate in Informatics, I bring a comprehensive background in Computer Science, with specialized expertise in *Computer Vision*, *Natural Language Processing (NLP)*, *Machine Learning*, and *Artificial Intelligence (AI)*. My academic pursuits have been complemented by hands-on experience in programming languages such as *Python* and *C++*, and proficiency in utilizing modules like *PyTorch*, *numpy*, and *TensorFlow* for developing advanced AI solutions. My professional experience spans working in the domains of *Computer Vision* and *NLP* across two different companies, where I applied my skills to solve real-world problems. My master's thesis, which focused on autonomous driving through computer vision, further underscores my capability to tackle complex challenges in *AI*. As I seek my first full-time opportunity, I am eager to bring my unique blend of academic knowledge, practical experience, and passion for technology to make a meaningful impact in the field.

Skills

Programming Python, C++, JavaScript · Pytorch, Numpy, Tensorflow, git, Docker, React Native, Nodejs, mySQL
Natural Languages Turkish (*native*), English (*advanced*), German (*basic*)

Experience

Quasara GmbH

Remote · Munich/Germany

COMPUTER VISION ENGINEER WORKING STUDENT

Dec. 2022 - May 2023

- Led the end-to-end development of a *Damage Classification project*, from initial data preprocessing to model training and implementation, significantly enhancing image analysis performance by utilizing state-of-the-art transformer models. This role showcased not only strong project ownership and technical expertise but also proficiency in applying cutting-edge AI technologies in practical applications.
- Facilitated communication with the client company through regular updates, in-depth discussions on findings, and comprehensive presentations of model outcomes, demonstrating exceptional client engagement and presentation skills.

FineSci Technology

Remote · Istanbul/Turkey

NATURAL LANGUAGE PROCESSING (NLP) INTERN

Jul. 2020 - Oct. 2020

- Contributed to a *News Classification and Clustering project* by focusing on the classification of news using NLP techniques.
- Utilized state-of-the-art transformer language models to classify news articles, showcasing expertise in applying cutting-edge NLP technologies.

Sabanci University

Istanbul/Turkey

UNDERGRADUATE TEACHING ASSISTANT

Feb. 2019 - Feb 2020

- Independently managed lab sessions for 20-30 students, providing hands-on support and guidance, alongside offering personalized mentoring during office hours to enhance students' understanding and engagement with course materials.
- Utilized C++ as the primary programming language to facilitate practical learning experiences in the *Introduction to Computing* course, demonstrating deep technical knowledge and application skills.

Education

Technical University of Munich

Munich, Germany

MASTERS'S DEGREE INFORMATICS

Oct. 2021 - Mar. 2024

- **Specializations:** *Computer Vision*, *Natural Language Processing (NLP)*, *Machine Learning*, *Artificial Intelligence*
- **Grade:** 2.0/5.0 (*German Grading System*)

Sabanci University

Istanbul/Turkey

BACHELOR'S DEGREE COMPUTER SCIENCE AND ENGINEERING

Sep. 2016 - Jun. 2021

- **Graduation Project Area:** *Natural Language Processing (NLP)*
- **Major GPA:** 3.78/4.0 (*US Grading System*)

Selected Projects in Computer Vision

Self-Supervised Feature Learning for 3D LiDAR Semantic Segmentation with NeRFs

Munich/Germany

MASTER'S THESIS · TECHNICAL UNIVERSITY OF MUNICH

May. 2023 - Dec. 2023

- Conducted my Master's thesis under CARIAD, the automotive software company of Volkswagen, focusing on the *autonomous driving domain*.
- Managed the entire project lifecycle, from data preprocessing to the novel application of *Neural Radiance Fields (NeRFs)* and *3D LiDAR models*, demonstrating a comprehensive approach to complex challenges in the field.
- Utilized state-of-the-art techniques to significantly reduce the reliance on labeled datasets in autonomous driving, demonstrating the potential for more efficient and scalable model training methodologies.

Implementation of Panoptic Neural Field

Munich/Germany

ADVANCED PRACTICAL COURSE · TECHNICAL UNIVERSITY OF MUNICH

Oct. 2022 - Mar. 2023

- Implemented the *Panoptic Neural Field (PNF)* paper from scratch using *Python*, *Pytorch*, *Kaolin Wisp*, and the *KITTI 360 dataset*, demonstrating initiative and expertise in translating theoretical concepts into practical, executable code in the absence of pre-existing implementations.
- Optimized the *PNF* architecture for enhanced performance, employing advanced techniques to achieve significant improvements in model efficiency and accuracy, showcasing my ability to innovate and improve upon existing methodologies.

Improving Point Cloud Transformer using Curve Aggregation

Munich/Germany

MACHINE LEARNING FOR 3D GEOMETRY COURSE PROJECT · TECHNICAL UNIVERSITY OF MUNICH

Apr. 2022 - Sep. 2022

- Improved the shape analysis capabilities of a *Point Cloud Transformer* by implementing a *Curve Aggregation* method, showcasing my ability to enhance model performance for detailed 3D point cloud processing. This novelty led to more accurate shape interpretations on the *ShapeNet Parts* dataset.
- Successfully converted the *Point Cloud Transformer's* implementation from *Jittor* to *PyTorch*, demonstrating technical proficiency and versatility in adapting complex models to widely used frameworks.

3D Perception for Autonomous Driving Survey

Munich/Germany

ADVANCED SEMINAR COURSE · TECHNICAL UNIVERSITY OF MUNICH

Oct. 2022 - Apr. 2022

- Conducted in-depth research on *3D Object Tracking Methods*, with a particular focus on utilizing infrastructure sensors. This involved a comprehensive comparison of cutting-edge methodologies presented in recently published papers from top-tier conferences, demonstrating my analytical skills and ability to synthesize complex information.
- Written a survey paper that encapsulates the findings and insights derived from comparing recent advancements in 3D object tracking.

Skin Cancer Classification

Istanbul/Turkey

MACHINE LEARNING COURSE · SABANCI UNIVERSITY

Feb. 2020 - Jun. 2020

- Used transfer learning techniques to facilitate early diagnoses of skin cancer through image analysis of skin segments. This approach enhanced the accuracy and reliability of diagnostic processes.

Selected Projects in NLP

NLP and Knowledge Graphs for Research Cluster Prediction and Analysis

Munich/Germany

TUM-DI-LAB INTERDISCIPLINARY PROJECT · TECHNICAL UNIVERSITY OF MUNICH

Oct. 2022 - Mar. 2023

- Participated in *Unsupervised Classification of Research Papers Project* and proposed a novel *Hierarchical Classification Method* while successfully applying existing methods.
- Used the cutting-edge *SPECTER* embedding model to enhance the quality of embeddings substantially. This choice enabled a more precise and nuanced understanding of research paper content, contributing to the project's success.

Emotional Clustering of Social Media Users

Munich/Germany

ADVANCED PRACTICAL COURSE · TECHNICAL UNIVERSITY OF MUNICH

Apr. 2022 - Sep. 2022

- Used the pre-trained *BERT model*, extracted embeddings to cluster users based on their textual data. This approach demonstrated my proficiency in utilizing advanced NLP techniques for user segmentation.
- Preprocessed Reddit users' posts to align with the pre-trained *BERT model's* requirements, showcasing my ability to prepare and adapt large-scale datasets for complex NLP tasks
- Applied a variety of *Dimensionality Reduction Methods*, including *HDBSCAN* and *KMeans*, to analyze and cluster high-dimensional data efficiently.

Meeting Scheduler Chatbot

Istanbul/Turkey

BACHELOR'S GRADUATION PROJECT · SABANCI UNIVERSITY

Sep. 2020 - Jun. 2021

- Developed an advanced chatbot utilizing the *RASA Bot Framework*, incorporating pre-trained natural language understanding methods to accurately process and interpret user inputs. This approach showcased my ability to use state-of-the-art AI technologies for creating interactive and intelligent conversational agents.
- Implemented a graphical user interface for the chatbot using *React* and *Node.js*, encapsulated within *Docker* containers for ease of deployment and scalability. This end-to-end development highlights my proficiency in full-stack development and my commitment to delivering robust, scalable applications.