

CAGIN SENEMOGLU

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Education

Technical University of Darmstadt, M.Sc. in Artificial Intelligence & Machine Learning Oct 2024 – 2026

- GPA: 2.3 in the German grading system.
- **Coursework:** NLP, Computer Vision, Deep Generative Models, Deep Learning, Multimodal AI

MEF University, B.Sc. in Computer Engineering Sep 2020 – Jun 2024

- GPA: 1.8 in the German grading system.
- **Coursework:** Data Structures & Algorithms, AI/ML, Microprocessors, and Automata.

Experience

Volkswagen Group & UKP Lab, Master's Thesis Student Sep 2025 – Present / Darmstadt, Germany

- Developed a contrast-set generation framework using QA instances derived from Volkswagen annual reports, applying controlled meaning-preserving and meaning-altering perturbations with **vLLM**, **Hugging Face**, and open-source **Qwen**, **DeepSeek**, and **Llama** models.
- Built an automatic validation pipeline combining **NLI** models and **LLM-as-a-Judge** evaluation to assess the semantic validity of generated contrast-set instances and filter unreliable perturbations.
- Implemented and hosted a **Python**-based **Streamlit** annotation tool, used human annotations to calibrate the automatic evaluators, and benchmarked multiple QA models on the resulting contrast set to compare their performance.

Dogus Technology, Back-end Developer Jul 2023 – Jul 2024 / Istanbul, Turkey

- Developed **Java** and **Kotlin** back-end services with **Spring Boot** for **microservice** and **monolithic** applications, using **GraphQL APIs** and **Apache Kafka** for asynchronous, event-driven communication.
- Contributed to applications serving large user bases, including a banking platform with approximately **18 million** users and other products with more than **one million** downloads.
- Built an internal employee skills and talent-management platform for Dogus Holding, integrating **LDAP-based authentication** and employee data, project discovery, user profiles, and certificate management.
- Practiced **pair programming** and implemented **unit**, **integration**, and **acceptance tests** using **Mockito** and **Gaug**; maintained **CI/CD** pipelines with **Jenkins** and **Azure DevOps**.

Devoks, Front-end Developer Intern Jul 2022 – Sep 2022 / Istanbul, Turkey

- Developed a responsive front-end application using the **Angular** framework with **TypeScript**, **HTML**, and **CSS**, and implemented reusable user-interface components.
- Implemented a regex-based search algorithm that improved search performance by approximately **35%** and enhanced the overall user experience.

Projects

Financial QA Contrast-Set Generation and Evaluation Toolkit

- Ran open-source models with approximately 70B parameters on UKP Lab's multi-GPU infrastructure using tensor-parallel **vLLM** inference, and designed few-shot prompts for controlled contrast-set generation from financial QA data.
- Developed an evaluator-selection and calibration workflow combining **NLI** and **LLM-as-a-Judge** methods, using human annotations and inter-annotator agreement metrics to identify and tune the most reliable automatic evaluation strategy.
- Built modular Python tools for perturbation generation and a **Streamlit-based annotation interface**, then used the validated contrast set to benchmark and compare multiple QA models.

ClaimFrame – Video Claim Extraction and Review Platform

- Developed a Python-based pipeline for extracting factual claims and their timestamps from videos, using prompt engineering and open-source Qwen-based models served with **vLLM** on UKP Lab GPUs.
- Implemented a sliding-window video-processing strategy to handle long videos and integrated **PyTorch**, **Hugging Face Transformers**, and **Torchvision** into the claim-extraction workflow.
- Built a **FastAPI** service for video processing, claim review, feedback collection, and structured **JSONL** export, with a lightweight **Next.js** and **React** interface for human validation.

FixTrack – QR-Based Maintenance Reporting System

- Developed a building-maintenance application that allows users to scan location-specific QR codes, report problems, and create maintenance tickets.
- Built the front end with **React** and **Firebase** and implemented the back end using **AWS API Gateway**, **Lambda**, **DynamoDB**, and **S3**.

ARC-Tune – ARC-AGI LLM Fine-Tuning

- Augmented the ARC-AGI dataset and transformed it into a supervised training dataset for fine-tuning an open-source language model.
- Fine-tuned the model using **PyTorch** and **LoRA** and performed hyperparameter tuning to compare training configurations and model performance.

LibriFlow – Microservices Library Management System

- Developed a library management application with Spring Boot and Kotlin, supporting book ordering, borrowing, returns, and CRUD operations.
- Built the microservice-based system with PostgreSQL, MongoDB, Apache Kafka, and Eureka Server, and Dockerized the application for consistent deployment.

Skills

PROGRAMMING LANGUAGES	Experienced: Python Java Kotlin TypeScript JavaScript SQL Familiar: C Rust
WEB DEVELOPMENT	Spring Boot FastAPI Angular Mockito Gauge Microservice and Monolithic Streamlit
MACHINE LEARNING AND AI	PyTorch Torchvision TensorFlow Hugging Face Hyperparameter Tuning Numpy pandas Matplotlib scikit-learn
DATABASE AND DEVOPS	AWS Firebase MongoDB Docker Kubernetes Jenkins Azure DevOps
LANGUAGES	Native: Turkish Fluent: English Lower-intermediate: German

Certificates

- Generative AI with Large Language Models
- AWS Certified Solutions Architect – Associate (SAA-C03) Preparation, Parts 1–9
- AWS Cloud Practitioner Preparation
- Yetkin Gençler (YetGen)

Extracurricular Activities

Freelancer, Coinoxs – Managed a 500+ member Discord community and a Twitter account with 1.5K+ followers, and developed Discord bots.

Assistant, MEF Technology Office – Designed the MEF TTO website and supported students in preparing TÜBİTAK 2209 project proposals.

Organization Team Lead, StartupMEF Entrepreneurship & Innovation Club – Organized the **Future Founders event**, coordinating sponsors, speakers, and the venue for approximately 250 in-person and 200 online participants.

PR & Organization Team Lead, NevMUN – Led public relations and event organization for high-school Model United Nations conferences.

School Sports Teams – Competed as a member of the school basketball team for six years and the football team for four years.

Interests

Large Language Models | Generative AI | Natural Language Processing | Machine Learning & AI | Data Science | Backend Development | Cloud Computing | AWS | Data Visualization