

# BERKAY MENGUNOGUL

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## EDUCATION

### Northeastern University

*Master's in Informatics; GPA: 4.0/4.0*

Advisor: Carolyn Zuk

Massachusetts, USA

Sep 2023 - Present

### Marmara University

*Bachelor's in Computer Engineering; GPA: 3.04/4.00*

Thesis: Early Diagnosis of Alzheimer's Disease with Artificial Intelligence

Advisor: Mustafa Agaoglu

Istanbul, Turkey

Jun 2020 - Sep 2022

## PUBLICATIONS

### Conference Publications

- C1. C. Erdoğanılmaz, **B. Mengunogul** and M. Balci, "Unveiling the Black Box: Investigating the Interplay between AI Technologies, Explainability, and Legal Implications," 2023 8th International Conference on Computer Science and Engineering (UBMK), Burdur, Türkiye, 2023, pp. 569-574, doi: 10.1109/UBMK59864.2023.10286653.
- C2. C. Erdoganyilmaz and **B. Mengunogul**, "An Original Natural Language Processing Approach to Language Modeling in Turkish Legal Corpus: Improving Model Performance with Domain Classification by Using Recurrent Neural Networks," 2022 Innovations in Intelligent Systems and Applications Conference (ASYU), Antalya, Turkey, 2022, pp. 1-6, doi: 10.1109/ASYU56188.2022.9925363.

## WORK EXPERIENCE

### VeriUs Technology

*Generative AI Engineer, Remote*

Istanbul, Turkey

Aug 2023 - Present

- Developed a data augmentation algorithm that expanded domain-specific dataset size from 500 to 10,000 entries, enhancing data diversity and model training robustness.
- Fine-tuned over 60 open-source large language models (LLMs), optimizing them for specific applications and improving overall performance.
- Significantly reduced LLM inference time by implementing batch decoding and quantization techniques.
- Conducted training for 30 professionals in NLP tasks, including model fine-tuning and prompt engineering, enhancing team capabilities in AI applications.
- Improved vector database hit rate by restructuring data into a Q&A format, leading to more efficient and accurate information retrieval.

### VeriUs Technology

*Machine Learning Engineer*

Istanbul, Turkey

Sep 2022 - Jul 2023

- Led a team of 5 interns, succeeded 98% accuracy by training BERT models for Name Entity Recognition task.
- Applied pretraining techniques and fine-tuned models for NER, Summarization, and Semantic Search tasks.
- Reduced the cost of training significantly by transitioning models from DataParallelism to ZeRO Stage 3.
- Reduced the size of the Fasttext Embedding by 37% by removing the negative vector matrix.
- Utilized MLFlow and Docker for tracking and managing developed services.

### Compact Mind

*Machine Learning Intern, Remote*

Austin, Texas, USA

Aug 2022 - Sep 2022

- Obtained knowledge about Curriculum Learning, Backtests, Meta-Strategy Paradigm, Copula Theory.
- Explained "System 1 and System 2 Thinking" approach to improve decision-making.
- Implemented a tax-cutting mechanism in the algorithm's Environment Layer to enhance model realism.

**Marmara University***Undergraduate Researcher, Supervisor: Assoc. Prof. Murat Can Ganiz***Istanbul, Turkey***Feb 2022 - Aug 2022*

- Presented and Implemented a clustering approach for 271 crime types, resulting in 30 clusters.
- Conducted experiments on Multi-Class Classification and NER tasks using various machine learning models.
- Deployed Doccano, assisted and monitored the users, collected approximately 10,000 labeled documents.

**Redzeplin UG***Software Engineer Intern***Berlin, Germany***Aug 2021 - Oct 2021*

- Learned about Web 3.0 and Blockchain Technology. Developed decentralized applications (DApps) using Web3.js.
- Took a leading role in designing the system architecture that enables users to send cryptocurrencies as gifts.

**Shelly Sleep***Full-Stack Developer, Remote***Berlin, Germany***Jun 2020 - Feb 2021*

- Designed and normalized database, developed a RESTful API using Flask.
- Built a custom Swift-React-Native bridge library to overcome iOS restrictions.
- Learned React-Native independently, enabling the successful completion of the project after team members left.
- Published the app in Germany and Turkey. Reached over 10,000 registered users till October 2021.

**HONORS AND AWARDS**

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**CPS Leaders and Scholars Award***May 2023*

The recipient was selected by the committee in recognition of impressive academic and personal achievements, as well as the potential to leverage their degree to create a difference in the world. The award offers tuition scholarship funding, which will cover a portion of the total program tuition costs.

**Best Paper Award Certificate 2nd Place***Sep, 2022*

The project "An Original Natural Language Processing Approach to Language Modeling in Turkish Legal Corpus: Improving Model Performance with Domain Classification by Using Recurrent Neural Networks" has been awarded Best Paper Award 2nd Place at Innovations in Intelligent Systems and Applications Conference (ASYU 2022) September 7-9, 2022, Antalya, TURKEY.

**Honor Student***Sep, 2022*

Graduated as honor student from Marmara University.

**BlockFellow Hackathon 2019***Feb, 2019*

Developed a supply chain tracking system with blockchain technology. The project selected in top 10 among hundreds of projects from 15 Universities at first blockchain hackathon in Turkey.

**GRANTS**

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**Erasmus+***Aug 2021*

By the European Commission, a grant was awarded to undertake an internship in Germany, where practical experience was gained and language and cultural skills were improved.

**TECHNICAL SKILLS**

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**Programming Languages/Tools**

Python, PyTorch, PyTorch Lightning, TensorFlow, Transformers, Evaluate, PEFT Pandas, Numpy, Scikit, OpenCV, Matplotlib, Plotly, DeepSpeed, Docker, Flask, SQL, C/C++, JavaScript, React-Native, REST API, Telerik Fiddler, Git, Gitlab, Jira, Bitbucket,  $\text{\LaTeX}$

**Skills**

Machine Learning, Deep Learning, Generative AI, Reinforcement Learning, NLP, Computer Vision, RNN, LSTM, Transformer, GAN, Distributed Training, Agile

LANGUAGE PROFICIENCIES

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Turkish	Native
English	Full Proficiency, TOEFL 96 Points