

# BERKAY MENGUNOGUL

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## EDUCATION

<b>Northeastern University</b> <i>Master's in Informatics: Analytics Concentration</i>	<b>Massachusetts, USA</b> <i>Sep 2023 - Present</i>
<b>Marmara University</b> <i>Bachelor of Science in Computer Engineering; GPA: 3.04/4.00</i> Thesis: Early Diagnosis of Alzheimer's Disease with Artificial Intelligence Advisor: Assoc. Prof. Mustafa Agaoglu	<b>Istanbul, Turkey</b> <i>Sep 2022</i>

## PUBLICATIONS

### Conference Publications

- C1.** 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.

### Manuscripts under Review

- M1.** C. Erdoganyilmaz and **B. Mengunogul**, M. Balci, "Unveiling the Black Box: Investigating the Interplay between AI Technologies, Explainability, and Legal Implications."

## WORK EXPERIENCE

<b>VeriUs Technology</b> <i>Machine Learning Engineer</i> <ul style="list-style-type: none"><li>Led a team of 5 interns, succeeded 98% accuracy by training BERT models for Name Entity Recognition task.</li><li>Applied pretraining techniques and fine-tuned models for NER, Summarization, and Semantic Search tasks.</li><li>Reduced the cost of training significantly by transitioning models from DataParallelism to ZeRO.</li><li>Reduced the size of the Fasttext model by 37% by removing the negative vector matrix.</li><li>Utilized MLFlow and Docker for tracking and managing developed services.</li></ul>	<b>Istanbul, Turkey</b> <i>Sep 2022 - Present</i>
<b>Compact Mind</b> <i>Machine Learning Intern, Remote</i> <ul style="list-style-type: none"><li>Obtained knowledge about Curriculum Learning, Backtests, Meta-Strategy Paradigm, Copula Theory.</li><li>Explained "System 1 and System 2 Thinking" approach to improve decision-making.</li><li>Implemented a tax-cutting mechanism in the algorithm's Environment Layer to enhance model realism.</li></ul>	<b>Austin, Texas, USA</b> <i>Aug 2022 - Sep 2022</i>
<b>Marmara University</b> <i>Undergraduate Researcher, Supervisor: Assoc. Prof. Murat Can Ganiz</i> <ul style="list-style-type: none"><li>Presented and Implemented a clustering approach for 271 crime types, resulting in 30 clusters.</li><li>Conducted experiments on Multi-Class Classification and NER tasks using various machine learning models.</li><li>Deployed Doccano, assisted and monitored the users, collected approximately 10,000 labeled documents.</li></ul>	<b>Istanbul, Turkey</b> <i>Feb 2022 - Aug 2022</i>
<b>Redzeplin UG</b> <i>Software Engineer Intern</i> <ul style="list-style-type: none"><li>Learned about Web 3.0 and Blockchain Technology. Developed decentralized applications (DApps) using Web3.js.</li><li>Took a leading role in designing the system architecture that enables users to send cryptocurrencies as gifts.</li></ul>	<b>Berlin, Germany</b> <i>Aug 2021 - Oct 2021</i>

## 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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### 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.

## PORTFOLIO OF MOST RELEVANT PROJECTS

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### Marmara University

Istanbul, Turkey

Projects

Jun 2020 - July 2022

- **Early Diagnosis of Alzheimer’s Disease:** Conducted research on Alzheimer’s Disease to diagnose its early stage from MRI data with CNNs. Finetuned a ResNet model with MRI data of patients from ADNI, OASIS3.
- **Tracking and Counting Number of Passing Vehicles At A Highway:** Implemented BLOB Detection and trained YOLOv5 with vehicle images then compared the performance on a short footage from surveillance camera.
- **Grid World:** Implemented Q-Learning and Prioritized Sweeping Algorithm to solve a self-made grid world puzzle and analyzed the results with different parameters.

## TECHNICAL SKILLS

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### Programming Languages/Tools

Python, PyTorch, PyTorch Lightning, TensorFlow, Keras, Pandas, Numpy, Scikit, OpenCV, Matplotlib, Plotly, DeepSpeed, Docker, Flask, SQL, C/C++, JavaScript, React-Native, REST API, Telerik Fiddler, Git, L<sup>A</sup>T<sub>E</sub>X

### Skills

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

## LANGUAGE PROFICIENCIES

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### Turkish

Native

### English

Full Proficiency, TOEFL 96 Points