

# ÜNAL AKÜNAL

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## Education

- **Technical University Of Munich (TUM), Munich, Germany** (10/2018 - 04/2021)  
Master of Science in Computer Science, Graduated in April 2021
- **Middle East Technical University (METU), Ankara, Turkey** (09/2013 - 06/2018)  
Bachelor of Science in Computer Science, Graduated June 2018

## Master's Thesis

### **Applications of Federated Learning on Brain Lesion Segmentation**

At **TUM**, under the supervision of Prof. Björn Menze from **Image-Based Biomedical Modeling** research group, I have worked on my master's thesis that focuses on the application and improvement of a state of the art **federated learning** algorithm (FedMA) on **brain tumor segmentation** dataset (BraTS). My results showed that FedMA can improve both global and local segmentation accuracy in a distributed network of clients with heterogeneous datasets (*PyTorch*) (08/2020 - 03/2021)

## Research Projects

### **Helmholtz Munich**

- I am a Research Assistant (HiWi) at Theis Lab under the Institute of Computational Biology in Helmholtz Munich. I have been working with Dr. Hananeh Aliee and Dr. Maria Colome Tatche on applying **LSTM autoencoders and variational autoencoders** over high dimensional, sparse **scATAC-Seq data** taken from mouse and human cell atlases, in order to increase the **interpretability of epigenetic information**. (*Tensorflow, PyTorch*) (10/2019 - present)

### **Technical University of Munich (TUM)**

- **Interdisciplinary Project**, Under the supervision of Dr. Benjamin Roth from LMU CIS, I worked on improving the vector space representations of ingredients from 1m+ recipes for a virtual dietary advisor, **by fine-tuning pre-trained GloVe and fastText embeddings**. (*Tensorflow, PyTorch*) (10/2019 - 04/2020)

### **Middle East Technical University**

- **Final Year Project**, Designed and implemented a web based, smart algorithmic trading, backtesting and optimization framework. I optimized the algorithms using **LSTM and quantitative methods**. Our paper for the framework was accepted in the METU DTSS 18 conference. (*GoLang, Python, Tensorflow, Weka*) (2017-2018)
- Analyzing different classification models for predicting toxic comments on Wikimedia dataset (*Python, Tensorflow, Scikit-Learn*) (2018)

## Professional Experience

**Otsimo** (01/2016 - 07/2019) I was the first employee, software engineer and shareholder of the award winning startup Otsimo. Otsimo provides mobile educational platforms for children with autism. Otsimo's special education applications have over 100 000 users over 12 countries.

Projects I worked on:

- Implementation of a real time Speech Recognition model using **CNNs on spectrogram of audio files**, and a JS/WASM signal preprocessor on the client side (*Tensorflow, Python, JS, C++, WASM*) (2019)
- Designed, implemented and maintained a service to manage hundreds of thousands of assets for 50+ educational games and deployed it as an internal framework for autonomous game development (*Python, GoLang, PostgreSQL, GRPC*) (2016 - 2017)
- Implemented a monitoring system integrated with the orchestration software (*Prometheus, Kubernetes, Docker, Python, GoLang, JS, Grafana*) (2018)
- Design and implementation of multiple core game mechanics (*Cocos2D, PhaserJS, JS*) (2016)

### **Awards**

- High Honour roll for 2 semesters, Honour roll for 4 semesters during my bachelor's (2014- 2018)
- 3rd place in the final year project exhibition of METU Computer Science department (2018)

### **Knowledge And Skills**

**Programming Languages:** Python ,GoLang, C++, C, Javascript, SQL

**Frameworks/Databases:** PyTorch, Tensorflow, PostgreSQL, Kubernetes, Docker

**Spoken Languages:** Turkish(Native), English (Advanced, TOEFL: 108), German (Elementary)

### **Extracurricular Activities**

- Songwriter & bass guitarist at my professional band with 2 albums, Carnac (2013 - present)
- Wrote over 50 album critics for the most famous rock music blog in Turkey (2012 - 2015)