Mustafa Talha Avcu

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Education

University of Southern California — Los Angeles, CA
Master of Science in Computer Science, CGPA: 3.96/4.00 — *May 2022*

– Selected Courses: Machine Learning, Analysis of Algorithms, Database Systems, Applied Machine Learning for Games, Estimation Theory, Random Processes, Applied Natural Language Processing

Bilkent University — Ankara, Turkey
Bachelor of Science in Electrical and Electronics Engineering, CGPA: 3.93/4.00 — *Jun 2019*

– Exchange student at Korea University for one semester

Technical Skills

Programming Languages: Java, JavaScript, TypeScript, Python, Matlab, C++, SQL

Machine/Deep Learning: Large language models (LLMs), Tensorflow, Scikit-learn, AutoGluon, NumPy, SciPy

AWS Technologies AWS CDK, CloudFormation, S3, Lambda, ECS, ECR, IAM, CloudWatch, Eventbridge, SQS, SNS, Sagemaker, Bedrock

Others: Linux, Docker

Work Experience

Amazon — Seattle, WA
Software Development Engineer — *August 2022 - Present*

– Provided cross-team support for Science team to develop and deploy large language models (LLMs) within Amazon's chatbot.

– Developed a concession feature for customers to return their out-of-policy Prime Video orders in non-US marketplaces in Amazon's chatbot.

– Designed and created ML pipeline using AWS technologies such as Sagemaker, S3, CloudWatch, IAM etc. to enable Amazon's chatbot team to train/test/re-train/deploy machine learning models in a CI/CD fashion.

– Revamped Device Item Picker in Amazon's chatbot where customers can see and choose their registered devices to get support. I have created a new design by changing the upstream services to overcome limitations hindering certain customers to see their devices.

– Helped the team migrate web-based APIs to a code package, and created unit and integration tests.

– Onboarded support for new Amazon devices to Amazon's chatbot, and removed the support for several deprecated devices.

– Participated in team's on-call rotations.

Neural Systems Engineering and Information Processing Lab (NSEIP) — Los Angeles, USA
Research Assistant — *Sept 2019 - Dec 2021*

– Modelled large-scale brain networks during direct electrical stimulation, and developed nonlinear models that are amenable for control in closed-loop brain computer interface (BCI) applications.

Agency for Science, Technology and Research (A*STAR) — Singapore
Data Science Intern — *Jun 2018 - Sept 2018*

– Studied the detection of epileptic seizures using least EEG channels, and developed a Convolutional Neural Network (CNN) architecture **SeizNet**

Teaching Experience

- **Bilkent University**
  Teaching Assistant for CS114 Introduction to Programming for Engineers
  Ankara, Turkey
  Summer 2016, Spring 2017

Honors & Awards

- **Annenberg Fellowship with admission to University of Southern California (USC) PhD program, 2019**
- **Academic Excellence Graduation Award, 2019** Bilkent University Electrical and Electronics Engineering Department
- **IEEExtreme Programming Competition**
  - **IEEExtreme 10.0, 2016:** Ranked 2nd in Turkey, 20th in IEEE Region 8, 65th among all participants as a team of three undergraduate students
  - **IEEExtreme 9.0, 2015:** Ranked 3rd in Turkey, 30th in IEEE Region 8, 82nd among all participants as a team of three undergraduate students
- **Nationwide University Entrance Exam (LYS):** Ranked in top 0.01% among 2 million students in Turkey, 2014

Publications

M. T. Avcu, Z. Zhang, and DWS. Chan "Seizure Detection Using Least EEG Channels by Deep Convolutional Neural Networks" IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP), 2019 - **75 citations**