

Yavuz Faruk Bakman

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EDUCATION

University Of Southern California

PhD in Computer Science, Advisor: Salman Avestimehr, 4.0/4.0

Los Angeles, CA

August 2022 – Present

Bilkent University

BSc. in Computer Science, *Summa Cum Laude*

Ankara, Turkey

Sept 2017 – June 2022

PUBLICATIONS

- **Yavuz Faruk Bakman**, Duygu Nur Yaldiz, Baturalp Buyukates, S Avestimehr, Chenyang Tao, Dimitrios Dimitriadis, MARS: Meaning-Aware Response Scoring for Uncertainty Estimation in Generative LLMs - **ACL 2024**
- **Yavuz Faruk Bakman***, Duygu Nur Yaldiz*, YH Ezzeldin, S Avestimehr, Federated Orthogonal Training: Mitigating Global Catastrophic Forgetting in Continual Federated Learning - **ICLR 2024** *: Equal Contribution
- E. Mushtaq, Duygu Nur Yaldiz, **Yavuz Faruk Bakman**, J. Ding, Chenyang Tao, Dimitrios Dimitriadis, and S Avestimehr, “CroMo-Mixup: Augmenting Cross-Model Representations for Continual Self-Supervised Learning” - **ECCV 2024**
- Duygu Nur Yaldiz*, **Yavuz Faruk Bakman***, B Buyukates, C Tao, A Ramakrishna, D Dimitriadis, S Avestimehr, Do Not Design, Learn: A Trainable Scoring Function for Uncertainty Estimation in Generative LLMs - **Preprint** *: Equal Contribution
- Metehan Oguz*, Y. Umut Ciftci*, **Yavuz Faruk Bakman***, Do LLMs Recognize me, When I is not me: Assessment of LLMs Understanding of Turkish Indexical Pronouns in Indexical Shift Contexts - **ACL 2024 SIGTURK Workshop** *: Equal Contribution
- E. Mushtaq, **Yavuz Faruk Bakman**, J. Ding, and S. Avestimehr, “Federated alternate training (FAT): Leveraging unannotated data silos in federated segmentation for medical imaging,” 20th International Symposium on Biomedical Imaging (**ISBI**), **2023**

WORK EXPERIENCE

Research Assistant

University of Southern California

August 2022 – Present

Los Angeles, USA

- I have been working with Prof. Salman Avestimehr in Information Theory and Machine Learning Lab (vITAL).
- I have been working on **Trustworthy LLM, LLM Interpretability, Continual Learning, Federated Learning, and Contrastive Learning**.

Undergraduate Researcher

University of Maryland - College Park

June 2021 – December 2021

Maryland, USA - (Remote)

- Worked with UMD-UC Berkeley Team on TrojAI competition organized by NIST.
- Developed new methods using loss surface, layer similarity, and trojan transferability to detect backdoored models under the supervision of Prof. Tudor Dumitras
- Made a presentation to other participants about our detection pipeline.

Research Engineer

Hyperbee AI

June 2020 – June 2022

San Francisco Bay Area, USA - (Remote)

- Worked on accelerating and compressing neural networks for various computer vision tasks.
- Worked with Prof. Alper Erdogan on neural network quantization especially on binarization.
- Developed the new state-of-art weight binarization algorithm named as AHA: A Gradual Training Algorithm for Weight Binarization.

Undergraduate Researcher

Koc University AI Lab

June 2019 – December 2019

Istanbul, Turkey

- Worked with Prof. Deniz Yuret on neural networks especially computer vision and NLP.
- Implemented YOLO V2 on Knet framework in Julia which was the first implementation of YOLO in Julia .
- Yolo.jl package is released due to my work | YOLO.jl Package

TEACHING EXPERIENCE

Teaching Assistant

Spring and Fall 2024

CSCI 567: Machine Learning - USC

Los Angeles, USA

- The course is instructed by Prof. Vatsal Sharan (Spring 2024) and Prof. Dani Yogatama (Fall 2024).
- This course provides an introduction to machine learning theory and practical algorithms, covering various sub-fields of machine learning.
- Prepared questions for the exams, quizzes and homeworks.
- Supervised student groups for the course project.
- Held discussion hours about LLMs during lectures.

HIGHLIGHTED PROJECTS

TruthTorchLLM

Open-Source Hallucination Detection Library

- Developing an open-source hallucination detection library in Pytorch.
- The library enables users to run, evaluate, calibrate, combine, and develop hallucination detection methods with few lines of code. It supports both API-based models and Huggingface models.
- Implemented recent state-of-the-art hallucination detection methods in the library.

Automatic Personal Statement Generator

Job Clerk - Startup

- I developed the personal statement generator for the startup Job Clerk based in the UK, jobclerk.com
- Job Clerk has joined the startup accelerator of Cambridge University.

TALKS

“Advancing Continual & Federated Learning with Self-Mixed Supervision” at USC-Amazon Research Center, December 2023

AWARDS

Best Poster Award USC-Amazon Research Center - April 2023

University of Southern California, **Annenberg Computer Science Fellowship** - August 2022

Scholarship of the Turkish Prime Ministry, monthly stipend during the BSc program, 2017-2022

Scholarship of the Bilkent University, monthly stipend during the BSc program, 2017-2022

Ranked 62nd in Nationwide University Entrance Exam (LYS) among 2 million students, 2017

1st place and National Finalist in Region at TUBITAK National Science Olympiad, Chemistry Category, 2015

Ranked 246th place in Nationwide High School Entrance Exam (SBS) among 1.5 million students, 2013

NOTABLE COURSES

CSCI - 611: Mathematics of High-Dimensional Data (Fall 2022)

EE - 588: Optimization for the Information and Data Sciences (Fall 2023)

CSCI - 662: Advanced Natural Language Processing (Fall 2023)

CSCI - 670: Advanced Analysis of Algorithms (Spring 2024)

CSCI - 699: The Science of Large Language Models (Fall 2024)

SKILLS

Languages: Turkish (mother language), English

Programming: Python, Julia, Matlab, C++, Java

Database Programming: MySQL

Libraries and frameworks: Pytorch, Tensorflow, Knet