

Ufuk Soylu

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EDUCATION

University of Illinois at Urbana-Champaign, IL
MS&PhD in Electrical and Computer Engineering

Expected Graduation: May 2024
GPA: 3.90/4.00

Middle East Technical University (METU)
B.S. in Electrical and Electronics Engineering

Graduation: June 2018
GPA: 3.92/4.00 (Rank:4)

SELECTED COURSEWORK:

•Advanced Digital Signal Processing •Vector Space Signal Processing •Random Process •Machine Learning • Computational Inference •Convex Optimization •Computer Vision •Machine Learning for Signal Processing •Applied Machine Learning •Detection and Estimation Theory •Digital Imaging •Pattern Recognition •Case Studies in Entrepreneurship

COMPUTER SKILLS

-*Expertise:* MATLAB, LaTeX, Python (E.g. Pytorch, Numpy, Scipy, Scikit-Learn, Pandas, Matplotlib, SHAP, Skater, Huggingface, Icefall), -*Experience with:* C, C++, HTML, SQL

EXPERIENCE

Graduate Research and Teaching Assistant, University of Illinois **Fall 2018 - present**

- Engineered signal processing and deep learning methodologies, pioneering solutions to tackle the challenges in DL-based Quantitative Ultrasound and Ultrasound Localization Microscopy
- Conducted teaching duties in signal processing courses, collaborating with faculty members and mentoring undergraduate/graduate students through discussion sessions and office hours

Applied Scientist Intern, Amazon, Pittsburgh, PA **Summer 2023**

- Designed structured prompts to contextualize ASR models using LLMs, resulting in a 3% relative WER improvement and ICASSP submission
- Utilized Icefall for ASR and employed Hugging Face to develop optimized LLM inference

Applied Scientist Intern, Amazon, Seattle, WA **Summer 2021**

- Developed machine learning model interpretation tools designed for demand forecasting models working with time series data
- Used Shapley Values, Influential Instances, Partial Dependence Plots to develop a python code base that could be used across ML models

Deep Learning Scientist, SimBioSys, Urbana-Champaign, IL **Summer 2020**

- Engineered an innovative DL-based semantic segmentation algorithm to identify cancerous tissue in dynamic MRI imaging
- Curated a specialized MRI semantic segmentation dataset for lung cancer analysis

Research Intern, Max Planck Institute at Stuttgart **Summer 2017**

- Developed a DL-based localization method for the endoscopic capsule robot as part of a multi-disciplinary team, resulting in ICRA submission
- Collected in-vivo magnetic sensor data along with video for utilization in deep learning training

PUBLICATIONS

- U. Soylu and M. L. Oelze, "Calibrating Data Mismatches in Deep Learning-Based Quantitative Ultrasound Using Setting Transfer Functions," in *IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control*, doi: 10.1109/TUFFC.2023.3263119.
- U. Soylu and M. L. Oelze, "A Data-Efficient Deep Learning Strategy for Tissue Characterization via Quantitative Ultrasound: Zone Training," in *IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control*, doi: 10.1109/TUFFC.2023.3245988.
- U. Soylu, Y. Bresler, "Circumventing the Resolution-Time Trade-off in Ultrasound Localization Microscopy by Velocity Filtering", submitted to *IEEE Transactions on Computational Imaging* in January 2021.(arXiv:2101.09470)
- M. Turan, Y. Almalioglu, H. Gilbert, A. Sari, U. Soylu, M. Sitti, "Endo-VMFuseNet: A deep visual-magnetic sensor fusion approach for endoscopic capsule robots", *2018 IEEE International Conference on Robotics and Automation (ICRA)*