

Ufuk Soylu

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EDUCATION

University of Illinois at Urbana-Champaign, IL Expected Graduation: May 2024
MS&PhD in Electrical and Computer Engineering **GPA: 3.90/4.00**
MS Thesis Title: A Signal Processing Approach to Ultrasound Localization Microscopy
PHD Thesis Title: Remedies for Challenges in Deep Learning-based QUS Imaging

Middle East Technical University (METU) Graduation: June 2018
B.S. in Electrical and Electronics Engineering **GPA: 3.92/4.00 (Rank:4)**
Capstone Project: Overcoming obstacles with a low-cost track wheel robot

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

-Core: MATLAB, LaTeX, Python (E.g. Pytorch, Numpy, Scipy, Scikit-Learn, Pandas, Matplotlib, SHAP, Skater, Huggingface, Icefall), -Basics of: C, C++, HTML, SQL

EXPERIENCE

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- Graduate Research and Teaching Assistant, University of Illinois** **Fall 2018 - present**
- Applied signal processing and deep learning techniques to biomedical ultrasound imaging
 - Undergraduate and graduate level digital signal processing courses (ECE310 and ECE551)
 - Collaborated with professors/teaching assistants and guided 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
 - Used Icefall package for ASR model, used GPT-2 and LLaMa for LLM prompting
- Applied Scientist Intern, Amazon, Seattle, WA** **Summer 2021**
- Worked with time series data for demand forecasting and developed model interpretation tools
 - 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**
- Developed a new semantic segmentation algorithm based on deep learning for breast cancer
 - Prepared a semantic segmentation data-set for lung cancer
- Research Intern, Max Planck Institute at Stuttgart** **Summer 2017**
- Worked on multi-disciplinary team in designing a localization method for the endoscopic capsule robot by using deep learning algorithms
 - Gathered real-world sensor data and prepared a data-set to be used in deep learning training

PUBLICATIONS

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- 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)*