Arda Fazla

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Education

Master of Science - **Electrical and Electronics Engineering (3.91/4.00)** 2021-2024
Bilkent University - Faculty of Engineering Ankara, Turkey
Thesis: Novel Ensembling Approaches in Time Series Forecasting
Advisor: Prof. Süleyman Serdar Kozat

Bachelor of Science - **Electrical and Electronics Engineering (3.61/4.00, Ranking: 24/350)** 2017-2021
Middle East Technical University - Faculty of Engineering Ankara, Turkey

Research Interests

- Machine Learning (Tree-Based Models, Gradient Boosting, Ensemble Models)
- Deep Learning (Neural Networks, Sequence Models, Transformers, Generative Networks)
- Time Series Analysis and Forecasting (Nonstationarity and Normalization Problems, Auto-Regressive Models)
- Optimization (State-Space Models)
- Signal Processing (Kalman Filter, Particle Filter)

Publications

Journal Papers

4. **A. Fazla**, M. E. Aydin, S. S. Kozat, *"Time-Aware and Context-Sensitive Ensemble Learning for Sequential Data"*, IEEE Transactions on Artificial Intelligence, 2023, **In Second-Stage Revision**.
   Available: https://arxiv.org/abs/2211.16884
   Code: https://github.com/ardafazla/context-time-aware-ensemble
3. S. F. Tekin, **A. Fazla**, S. S. Kozat, *"Numerical Weather Forecasting using Convolutional-LSTM with Attention and Context Matcher Mechanisms"*, IEEE Transactions on Geoscience and Remote Sensing, 2023, **In Second-Stage Revision**.
   Available:
   Code: https://github.com/sftekin/ieee_weather
2. M. E. Aydin, **A. Fazla**, S. S. Kozat, *"Hybrid State Space-based Learning for Sequential Data Prediction with Joint Optimization"*, IEEE Transactions on Neural Networks and Learning Systems, 2023, **In Revision**.
   Available:
   Code: https://github.com/mustafaaydn/lstm-sx
1. **A. Fazla**, M. E. Aydin, S. S. Kozat, *"Joint optimization of linear and nonlinear models for sequential regression"*, Digital Signal Processing, Elsevier, 2022, **Accepted**.
   Available: https://doi.org/10.1016/j.dsp.2022.103802
   Code: https://github.com/ardafazla/jointoptimization

Conference Papers

1. K. G. Ince, A. Köksal, **A. Fazla**, A. A. Alatan, *"Semi-automatic annotation for object detection"*, Proceedings of the IEEE/CVF International Conference on Computer Vision, 1233-1239, 2021, **Accepted**.
   Available: https://doi.org/10.1109/ICCVW54120.2021.00143

In Progress

1. **A. Fazla**, S. S. Kozat, *"Online Causal Inference for Modeling User Preferences: A State Space Approach"*, 2023.

Academic Duties

Tutoring and Grading 2021 - Present

- *Electrical and Electronics Engineering, Bilkent University*
- EEE321 Signals and Systems
- EEE202 Circuit Theory
- MATH255 Probability and Statistics

Relevant Coursework

- Neural Networks (4.0/4.0)
- Statistical Learning and Data Analytics (4.0/4.0)
- Random Processes (4.0/4.0)
- Deep Generative Networks (4.0/4.0)
- Introduction to Computer Intelligence (4.0/4.0)
- Data Structures (4.0/4.0)
- Digital Signal Processing (4.0/4.0)

Additional Projects

Image Captioning based on LSTM with Transfer Learning, 2022

• *Bilkent University*

- Constructed a framework, which generates meaningful sentences describing a given image (Image Captioning).
- Employed state-of-the-art models such as ResNet, VGG-16 and InceptionV3, where LSTM is used as the main learning model for transfer learning.
- Used BERT transformers for word embedding.

Surveillance – Protective Measures 2021

• *Middle East Technical University*, Senior Year Project

- Designed a product that detects whether a person is not wearing a mask and/or showing fever symptoms.
- Our mask detection system uses the YOLOv4 algorithm for classification, trained on a self-constructed dataset with image augmentation.

Available: http://capstone.eee.metu.edu.tr/project-fair-2021/#BOMAS

Semi-Automatic Video Annotation for Object Detection 2021

• *Middle East Technical University*, EEE STAR Program, Finalist

- The project mainly involves computer vision and image processing. It consists of two parts: first, a multi-hypothesis tracking algorithm is introduced and then an annotation tool employing this algorithm is given.

Software Skills

- **Pyhton:** Professional research and industrial experience based on machine learning. High knowledge and experience on libraries such as *PyTorch*, *Tensorflow*, *Pandas*, *Numpy* and *Scikit-Learn*. I have experience with Docker and Git, via industrial projects.
- **MATLAB:** Professional research experience in signal processing and computer vision. Used for projects during my undergraduate courses, undergraduate research, and internships.
- **R:** Intermediate level experience, employed during research based on time-series forecasting using statistical models.
- **C/C++:** Intermediate experience in Arduino and various undergraduate projects.

Languages

Turkish: Native

English: Conversationally Fluent [TOEFL IBT 108/120 (Available Through: October 19, 2024)]

Extracurricular Activities

METU Ultimate Frisbee May 2019 – March 2020

Team Captain

• Took an active role in the METU Ultimate Frisbee team as a team captain where I improved my teamwork and leadership skills.