Burak **Aksar**

PH.D. STUDENT · COMPUTER ENGINEERING

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Interests: Machine Learning | Explainability | NLP | Dialogue and Interactive Systems | Large-Scale Computing

Education

Boston University — *Boston,USA*

PH.D. IN ELECTRICAL AND COMPUTER ENGINEERING, CGPA: 3.8 / 4.0 — *Sept. 2018 - Present*

- **Coursework:** Machine Learning, Deep Learning, Fairness-Transparency in AI, Advanced Data Structures

Sabanci University — *Istanbul,Turkey*

BACHELORS OF SCIENCE IN ELECTRONICS ENGINEERING, CGPA: 3.86/ 4.0 — *Sept. 2013 - June 2018*

Research Experience

Explainable and Scalable Machine Learning Analytics for Large-scale Data Centers — *Supervisor: Ayse Coskun*

PEACLAB & SANDIA NATIONAL LABS — *Sept. 2018 - Present*

- Designing ML frameworks for production HPC systems to automate performance analytics
- Developing counterfactual and model-agnostic explainability techniques for multivariate time-series ML models
- Researching on semi-supervised and unsupervised learning techniques for anomaly detection/diagnosis

Internships

IBM AI Research — *Boston, MA, USA*

RESEARCH SCIENTIST INTERN — *May - August 2021 & 2022*

- Researched on the NLP explainability techniques for conversational multi-agent systems (CMAS)
- Developed a multi-intent classification framework with a heuristic parser and NLU models for a CMAS
- Conducted tests, deployed the framework to the production pipeline, and filed 2 patents

Sandia National Laboratories — *Albuquerque, NM, USA*

MACHINE LEARNING SDE INTERN — *July - Sept. 2019 & 2020*

- Developed LSTM-based ML model to forecast time-series based performance metrics
- Designed an ML pipeline for run-time performance anomaly detection
- Deployed the pipeline to a production-level computing cluster with 1,488 compute nodes

Publications

[1] **B. Aksar** et al., "TESS: A Multi-intent Parser for Conversational Multi-Agent Systems with Decentralized Natural Language Understanding Models". Submitted to *EMNLP'22*.

[2] **B. Aksar** et al., "ALBADross: Active Learning Based Anomaly Diagnosis". In *Cluster'22*.

[3] **B. Aksar** et al., "E2EWatch: An End-to-end Anomaly Diagnosis Framework". In *Euro-Par'21*.

[4] **B. Aksar** et al., "Proctor: A Semi-Supervised Performance Anomaly Diagnosis Framework". In *ISC HPC'21*.

[5] E. Ates and **B. Aksar** et al., "Counterfactual Explanations for Multivariate Time Series". In *ICAPAI'21*. ArxiV.

Skills

Programming Languages Python, C++, Java, Bash, MATLAB, HTML, CSS, Javascript, SQL

Environment & Tools Tensorflow, scikit-learn, PyTorch, AWS Sagemaker, AWS Lambda

Honors & Awards

2019 **Student Volunteer Fellowship** Int. Conf. for HPC, Networking, Storage and Analysis (SC) — *Denver, U.S.A*

2019 **Richard Newton Young Student Fellowship** Design and Automation Conference (DAC) — *Las Vegas, U.S.A*

2018 **Distinguished Computer Engineering Fellowship** Boston University — *Boston, U.S.A*

2018 **Fulbright Ph.D. Scholarship Grantee** — *Ankara, Turkey*