ALPEREN GORMEZ

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EDUCATION

University of Illinois Chicago **Chicago, IL**
Doctor of Philosophy in Electrical and Computer Engineering; Cumulative GPA: 4.0/4.0 Aug 2019 - Present (2024)
Advisor: Asst. Prof. Erdem Koyuncu
Relevant Coursework: Machine Learning Systems Design (Stanford), Full Stack Deep Learning (UC Berkeley), Advanced Deep Learning and Reinforcement Learning (DeepMind), Neural Networks, Machine Learning, Parallel Processing (C, C++), Algorithms, Convex Optimization, Image Analysis and Computer Vision, Pattern Recognition, Statistical Digital Signal Processing, Digital Speech Processing

Bilkent University **Ankara, TURKEY**
Bachelor of Science in Electrical and Electronics Engineering Aug 2015 - Jun 2019
Relevant Coursework: Statistical Learning and Data Analytics, Neural Networks, Artificial Intelligence, Deep Learning Specialization (Coursera), Industrial Design Project, Digital Signal Processing, Microprocessors, Fundamental Structures of Computer Science, Probability and Statistics, Linear Algebra and Differential Equations

PUBLICATIONS

3. **A. Görmez** and E. Koyuncu, "Class Based Thresholding in Early Exit Semantic Segmentation Networks," arXiv:2210.15621 [cs.CV], 2022.
2. **A. Görmez** and E. Koyuncu, "Pruning Early Exit Networks," *2022 Sparsity in Neural Networks*, 2022.
1. **A. Görmez**, V. R. Dasari and E. Koyuncu, "E2CM: Early Exit via Class Means for Efficient Supervised and Unsupervised Learning," *2022 International Joint Conference on Neural Networks (IJCNN)*, 2022, pp. 1-8.

RESEARCH EXPERIENCE

•University of Illinois Chicago **Chicago, IL**
Research Assistant Aug 2019 - Present (2024)
- ◊ Utilized the neural collapse phenomenon in early exit semantic segmentation models to reduce computational cost by 23% while preserving the accuracy for edge devices.
- ◊ Examined the combined effects of early exiting, pruning and sparsity using PyTorch.
- ◊ Worked on early exit neural networks, adaptive inference, and model compression to decrease the computational cost of deep learning systems by 50% while preserving the performance.
- ◊ Experimented on efficient distributed neural network training.
- ◊ Supervised undergraduate students on early exit, knowledge distillation and conditional computation research.
- ◊ Participated in the following communities: EEML, tinyML, SNN.

•Nagoya University **Aichi, JAPAN**
Research Student May 2018 - Jul 2018
- ◊ Conducted a research on pattern recognition and anomaly detection under the supervision of Prof. Kenji Mase.

WORK EXPERIENCE

•Roku **San Jose, CA**
Machine Learning Intern May 2021 - Aug 2021
- ◊ Worked on reducing the inference time of a CTR prediction model in the Advertising Engineering team.
- ◊ Used mlpy for cross-feature generation and feature transformation, Apache Spark for big data processing and TFX for pipelining.
- ◊ Increased AUC by 0.03 and matched the inference time requirements.
- ◊ Experimented with early exit networks and knowledge distillation techniques using TensorFlow.

•University of Illinois Chicago **Chicago, IL**
Teaching Assistant Aug 2019 - Present
- ◊ Taught the ECE/CS 559 - Neural Networks using PyTorch (2021 Fall, 2022 Fall).
- ◊ Instructed students MATLAB for the ECE 311 - Communication Engineering course (2020 Fall, 2021 Spring, 2022 Spring).
- ◊ Helped students in the ECE 317 - Digital Signal Processing I course (2019 Fall, 2020 Spring).

•ASELSAN **Ankara, TURKEY**
Candidate Engineer Feb 2019 - Jun 2019
- ◊ Built neural networks in TensorFlow and classified the sounds received by a passive sonar.

◊ Worked on the visualization of the data collected by ultrasonic sensors using Python and Julia. Found a faulty sensor by analyzing the data.
◊ Implemented sonar signal processing algorithms in MATLAB on a Linux system for the acoustics signal processing department.

•Argela Technologies **Ankara, TURKEY**
Intern Jan 2018 - Feb 2018
◊ Wrote Python programs for Linux machines to transfer files automatically between servers.
◊ Contributed to the DSL-LTE Bonding Project by writing Python scripts to monitor the internet speeds of customers.
◊ Led the team in automated testing processes using Robot Framework.

•Lumos Laser **Ankara, TURKEY**
Embedded Systems Intern Jun 2017 - Jul 2017
◊ Optimized and simulated the data transfer between a computer and an FPGA of a fiber laser system using VHDL.

HONORS AND AWARDS

•IEEE Computational Intelligence Society Travel Grant: Received a travel grant to attend IEEE WCCI 2022.
•Eastern European Machine Learning Summer School 2022: Received the top-voted poster award for E^{2}CM.
•Bilkent University Honor Student: High academic standing, 2015 - 2019.
•Bilkent University Comprehensive Scholarship: Full tuition waiver and stipend during the B.S. program, 2015 - 2019.
•LYS Degree: Ranked 341st in Turkey's National University Entrance Exam among over 2 million students, 2015.

OUTREACH AND MENTORING

•Lacmus Foundation
Contributor Jul 2022 - Present
◊ Developing deep learning solutions in the open-source Lacmus project to support search-and-rescue operations aimed at missing people.

•University of Illinois Chicago **Chicago, IL**
Supervisor May 2022 - Present
◊ Supervising an undergraduate student on early exit networks research.
◊ Managed an undergraduate student in the GPIP program about neural networks, knowledge distillation and conditional computation research.

•Deep Learning Indaba
Mentor Jan 2021 - Present
◊ Voluntarily mentoring students about their research and their applications to industry and graduate schools to support machine learning and artificial intelligence in Africa.

PROFESSIONAL ACTIVITIES

•Reviewer
◊ IEEE Transactions on Computational Imaging, 2022.

•Member of the Organizing Team
◊ IEEE International Conference on Network Protocols (ICNP), 2019.