

BARIS ASKIN

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EDUCATION

Carnegie Mellon University, Pittsburgh, USA

August 2022 - June 2027 (Anticipated)

Ph.D. in Electrical and Computer Engineering

GPA: 4.0/4.0

Advisors: [Dr. Gauri Joshi](#) & [Dr. Carlee Joe-Wong](#)

Bilkent University, Ankara, Turkey

September 2017 - June 2022

B.Sc. in Electrical and Electronics Engineering

CGPA: 3.99/4.0

Valedictorian

Highest Ranked Graduate of 2022 in the Faculty of Engineering

RESEARCH INTERESTS

Federated Learning, Distributed Optimization, Machine Learning

WORK & RESEARCH EXPERIENCE

Graduate Researcher

September 2022 – Present

Carnegie Mellon University, Pittsburgh, PA

- Working on client scheduling for asynchronous federated learning (FL) with theoretical guarantees.
- Working on time- and resource-efficient algorithms for multi-model FL with convergence guarantees.
- Working on communication-efficient methods for federated multi-objective optimization.

Undergraduate Researcher

September 2020 – July 2022

[Imaging and Computational Neuroscience Lab](#), Bilkent University, Ankara, Turkey

- Worked on deep learning techniques for medical imaging under the supervision of [Dr. Tolga Cukur](#).
- Worked on super-resolution of Magnetic Particle Imaging (MPI) System Matrices with deep learning methods to accelerate the calibration process.
- Worked on learning-based image reconstruction techniques for MPI. Proposed the first deep plug-and-play priors-based method for MPI reconstruction.

Summer Intern

June 2021 – July 2021

ASELSAN Research Center (Sensors and Imaging Technologies), Ankara, Turkey

- Worked on novel deep learning models for the super-resolution of MPI system matrices under the supervision of [Dr. Alper Güngör](#).
- Proposed new deep learning-based methods to accelerate the calibration process.

Summer Intern

June 2020 – July 2020

TÜBİTAK Advanced Technologies Research Institute, Ankara, Turkey

- Worked on radar pulse detection and modulation classification project.
- Implemented a simulation using signal processing, image processing, and deep learning techniques.

RELEVANT COURSES

CMU

Advanced Introduction to Machine Learning, Convex Optimization, Intermediate Statistics, ABCDE of Statistical Methods in Machine Learning, Generative AI, Machine Learning with Large Datasets, Fundamentals of MDPs and Reinforcement Learning

Bilkent University

Linear Algebra, Statistical Learning and Data Analytics, Stochastic Models, Probability and Statistics, Signals and Systems, Computer Networks, Differential Equations, Digital Signal Processing, Telecommunications

PUBLICATIONS

1. **FedAST: Federated Asynchronous Simultaneous Training**
B. Askin, P. Sharma, C. Joe-Wong, G. Joshi,
The Conference on Uncertainty in Artificial Intelligence (UAI), 2024 [[Link](#)][[Code](#)][[Poster](#)]
2. **Federated Communication-Efficient Multi-Objective Optimization**
Under submission
Studies on deep learning applications in medical imaging while I was at Bilkent:
3. **DEQ-MPI: A Deep Equilibrium Reconstruction with Learned Consistency for MPI**
A. Güngör, B. Askin, D. A. Soydan, C. B. Top, E. U. Saritas and T. Çukur
IEEE Transactions on Medical Imaging, Aug. 2023 [[Link](#)][[Code](#)]
4. **A Denoiser Scaling Technique for Plug-and-Play MPI Reconstruction**
A. Güngör, B. Askin, D. A. Soydan, E. U. Saritas, C. B. Top and T. Çukur
International Journal on Magnetic Particle Imaging (IJMPI), Vol 9 No 1 Suppl 1, Mar. 2023 [[Link](#)]
5. **PP-MPI: A Deep Plug-and-Play Prior for Magnetic Particle Imaging Reconstruction**
B. Askin, A. Güngör, D. A. Soydan, E. U. Saritas, C. B. Top and T. Çukur
International Workshop on Machine Learning for Medical Image Reconstruction (MLMIR), 2022 [[Link](#)]
6. **TransSMS: Transformers for Super-Resolution Calibration in Magnetic Particle Imaging**
A. Güngör, B. Askin, D. A. Soydan, E. U. Saritas, C. B. Top and T. Çukur
IEEE Transactions on Medical Imaging, July 2022 [[Link](#)][[Code](#)]
7. **Deep Learned Super Resolution of System Matrices for Magnetic Particle Imaging**
A. Güngör, B. Askin, D. A. Soydan, C. B. Top and T. Çukur
2021 43rd Annual International Conference of the IEEE Engineering in Medicine & Biology Society (EMBC), 2021 [[Link](#)]

SKILLS

Languages	Python, MATLAB, Java, Assembly, VHDL
Frameworks	PyTorch, TensorFlow, OpenCV, Apache Spark

PROFESSIONAL SERVICES

- Reviewer for NeurIPS 2023, ICLR 2024, ICML 2024, AISTATS 2024, ISIT 2024, AAAI 2025, TMLR, and IEEE/ACM Transactions on Networking.
- Teaching Assistant for Introduction to Machine Learning for Engineers (18-661) in Spring 2024
- Teaching Assistant for Algorithms for Large-scale Distributed Machine Learning and Optimization (18-667) in Fall 2024

SELECTED AWARDS AND ADDITIONAL INFORMATION

- 2023-2024 Ben Cook Presidential Graduate Fellowship in Electrical & Computer Engineering at CMU
- Bilkent University Comprehensive Scholarship: Full tuition waiver & stipend during the B.Sc. Program.
- Scholarship of Turkish Ministry of Youth and Sports: Awarded stipend during the B.Sc. Program.
- Ranked 3rd in Academic Personnel and Postgraduate Education Entrance Exam (ALES) among 104 thousand applicants in Turkey.
- Ranked 252nd in Nationwide University Entrance Exam (LYS) among 2 million students in Turkey.
- Volunteer at Young Guru Academy (an international NGO based in Istanbul) from 2018 to 2020.
- Vice President at CMU Turkish Student Society since 2022.