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 (FL), Distributed Optimization, FL for Generative AI

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**
   B. Askin, P. Sharma, G. Joshi, C. Joe-Wong
   Preprint [Link]

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. **TranSMS: 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, ICLR, ICML, AISTATS, ISIT, AAAI, TMLR, and IEEE/ACM ToN
- Teaching Assistant for Introduction to ML for Engineers (18-661) in Spring 2024 and Algorithms for Large-scale Distributed ML 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
· 2022-2023 Carnegie Institute of Technology Dean's Fellowship 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.