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
· M.Sc. in Electrical and Computer Engineering (Aug. 2025, GPA: 4.0/4.0)

Bilkent University, Ankara, Turkey *September 2017 - June 2022*
· B.Sc. in Electrical and Electronics Engineering **GPA: 3.99/4.0**
Valedictorian – Highest Ranked Graduate of 2022 in the Faculty of Engineering

RESEARCH INTERESTS

Federated Learning (FL), Distributed Optimization, Language Models

WORK & RESEARCH EXPERIENCE

Applied Research Intern *May 2025 – August 2025*
NVIDIA Corporation, Herndon, VA

· Worked on scalable and asynchronous FL algorithms, preparing a paper for publication.

Graduate Researcher *August 2022 – Present*
Carnegie Mellon University, Pittsburgh, PA

· Working on time- and resource-efficient algorithms for multi-model FL with convergence guarantees.
· Working on communication-efficient methods for federated multi-objective optimization.
· Working on understanding how language models plan the output.

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
· 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 detection and modulation classification using signal & image processing, deep learning

PROFESSIONAL SERVICES

· Reviewer for NeurIPS, ICLR, ICML, AISTATS, ISIT, AAAI, TMLR, IEEE/ACM ToN and MLSys
· 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

RELEVANT COURSES AND TOOLS

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 RL, Deep RL

Bilkent University: Linear Algebra, Statistical Learning and Data Analytics, Stochastic Models, Medical Image Reconstruction and Processing, Probability and Statistics, Signals and Systems, Differential Equations, Digital Signal Processing, Telecommunications, Computer Networks

Tools: Python, MATLAB, Java, Assembly, VHDL, PyTorch, TensorFlow, OpenCV, Apache Spark

PUBLICATIONS

1. **Federated Communication-Efficient Multi-Objective Optimization**
   B. Askin, P. Sharma, G. Joshi, C. Joe-Wong
   International Conference on Artificial Intelligence and Statistics (AISTATS), 2025 [Link] [Code][Poster]

2. **Ravan: Multi-Head Low-Rank Adaptation for Federated Fine-Tuning**
   A. Raje, **B. Askin**, D. Jhunjhunwala, G. Joshi
   The Conference on Neural Information Processing Systems (NeurIPS), 2025 [Link]

3. **Language Model Planning From An Information Theoretic Perspective**
   M. Ustaomeroglu*, **B. Askin***, G. Joshi, C. Joe-Wong, G. Qu *equal contribution
   (Preprint, under review, 2025) [Link]

4. **Reviving Stale Updates: Data-Free Knowledge Distillation for Asynchronous FL**
   B. Askin, H. R. Roth, Z. Sun, C. Joe-Wong, G. Joshi, Z. Xu
   (Preprint, under review, 2025) [Link]

5. **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]

Some of the studies on deep learning applications in medical imaging while I was at Bilkent:

6. **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]

7. **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, 2022 [Link] [Code]

8. **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]

9. **Deep Learned Super Resolution of System Matrices for Magnetic Particle Imaging**
   A. Güngör, **B. Askin**, D. A. Soydan, C. B. Top and T. Çukur
   43rd Annual International Conf. of the IEEE Engineering in Medicine & Biology Society, 2021 [Link]

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/104k in Academic Personnel and Postgraduate Education Entrance Exam in Turkey
- Ranked 252nd/2M in Nationwide University Entrance Exam in Turkey
- Volunteer at Young Guru Academy (an international NGO based in Istanbul) from 2018 to 2020