

# BARIS ASKIN

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## EDUCATION

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### 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

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Federated Learning (FL), Distributed Optimization, Generative AI

## WORK & RESEARCH EXPERIENCE

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### Applied Research Intern

May 2025 – August 2025

NVIDIA, Herndon, VA

- Worked on scalable and asynchronous FL algorithms

### Graduate Researcher

September 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 transformer 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

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- 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

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**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

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- 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](#)]
- 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](#)]
- Language Model Planning From An Information Theoretic Perspective**  
M. Ustaomeroglu\*, B. Askin\*, G. Joshi, C. Joe-Wong, G. Qu \*equal authorship  
(Under review, 2025)
- 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](#)]  
*Studies on deep learning applications in medical imaging while I was at Bilkent:*
- 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](#)]
- 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](#)]
- 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](#)]
- 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](#)]
- 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

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- 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