

# BARIS ASKIN

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## EDUCATION

### Carnegie Mellon University, Pittsburgh, USA

- Ph.D. in Electrical and Computer Engineering

*Advisors: Dr. Gauri Joshi & Dr. Carlee Joe-Wong*

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

*August 2022 - June 2027 (Anticipated)*

**GPA: 4.0/4.0**

### Bilkent University, Ankara, Turkey

- B.Sc. in Electrical and Electronics Engineering

*Valedictorian – Highest Ranked Graduate of 2022 in the Faculty of Engineering*

*September 2017 - June 2022*

**GPA: 3.99/4.0**

## RESEARCH INTERESTS

Federated Learning (FL), Language Models, Distributed Optimization

## WORK & RESEARCH EXPERIENCE

### Applied Research Intern

*May 2025 – August 2025*

*NVIDIA Corporation, Herndon, VA*

- Worked on a scalable and asynchronous FL algorithm using data-free knowledge distillation [[Paper](#)]

### Graduate Researcher

*August 2022 – Present*

*Carnegie Mellon University, Pittsburgh, PA*

- Investigating how language models plan their outputs from an information-theoretic perspective.
- Exploring language model routing systems in federated settings.
- Working on RL fine-tuning for interactive LLM agents.
- Developing parameter-efficient fine-tuning methods for distributed settings.
- Designing FL algorithms with communication- and time-efficiency and convergence guarantees.

### 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

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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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### 1. Language Model Planning From An Information Theoretic Perspective

M. Ustaomeroglu\*, **B. Askin\***, G. Joshi, C. Joe-Wong, G. Qu

\*equal contribution

*International Conference on Learning Representations (ICLR), 2026* [[Link](#)]

### 2. Federate the Router: Learning LM Routers with Sparse and Decentralized Evaluations

**B. Askin\***, S. Patel\*, A. Nayak\*, A. Vigano, J. Woo, G. Joshi, C. Joe-Wong

(*Preprint, under review, 2026*) [[Link](#)]

### 3. 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, 2026*) [[Link](#)]

### 4. 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](#)]

### 5. 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](#)]

### 6. 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](#)]

*Selected papers on deep learning applications in medical imaging while I was at Bilkent:*

### 7. 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](#)]

### 8. 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](#)]

### 9. 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](#)]

## 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