

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

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. **Internal Planning in Language Models: Characterizing Horizon and Branch Awareness**
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

- 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