

# Atakan Topcu

PH.D. STUDENT · GRADUATE RESEARCHER

Department of Electrical Engineering and Computer Sciences, University of California, Berkeley  
Berkeley AI Research (BAIR), Berkeley, CA, United States

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## Research Focus & Availability

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**Research focus:** Diffusion-based generative models; video and dynamic image reconstruction; temporal consistency; generative inverse problems; computational imaging; high-frequency detail recovery.

**Availability:** Summer 2027 PhD Research Internship preferred; open to Fall 2026 / 2027 timing depending on team fit.

## Education

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**Ph.D. in Electrical Engineering and Computer Science, University of California, Berkeley** 2025 - 2030  
Berkeley, CA, United States *Expected*

- Advisor: Prof. Michael Lustig.
- Research focus: generative model-based video reconstruction for high-dimensional dynamic MRI.

**M.Sc. in Electrical and Electronics Engineering, Bilkent University** 2022 - 2025  
Ankara, Turkey

- Thesis: *Physics-Constrained Unsupervised Deep Learning for Accelerated Diffusion MRI*; CGPA: 3.91/4.00.
- Advisor: Prof. Emine Ulku Saritas.
- Developed subject-specific, physics-driven deep learning models for high-dimensional Diffusion MRI reconstruction and processing.

**B.Sc. in Electrical and Electronics Engineering, Bilkent University** 2018 - 2022  
Ankara, Turkey

- Graduated *Summa Cum Laude*; CGPA: 3.79/4.00; minor in Philosophy.
- Received Research Excellence Award from Bilkent University Faculty of Engineering.

## Research Experience

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**Graduate Researcher, Berkeley AI Research (BAIR), Mikgroup** 2025 - Present

- Developing diffusion-based generative methods for MRI reconstruction and computational imaging, with an emphasis on physics-guided inverse problems.
- Investigating video/dynamic MRI reconstruction with patch- and chunk-based diffusion sampling, targeting long-range temporal consistency, reduced temporal drift, and high-frequency detail recovery.
- Building reconstruction pipelines that combine learned generative priors with measurement and data-consistency constraints for accelerated imaging under severe undersampling.

**Graduate Researcher, National Magnetic Resonance Research Center (UMRAM), Saritas Lab** 2022 - 2025

- Developed deep learning models for MRI reconstruction, focusing on accelerated diffusion MRI using physics-based AI.
- Created an in-house diffusion MRI metrics framework and, with Prof. Kawin Setsompop's group at Stanford University, worked on speeding up whole-brain submillimeter diffusion MRI by improving signal quality and reducing scan times.
- Collaborated on MRI contrast-agent projects with UNAM and Sorbonne University, and with Hacettepe University Hospital on a diffusion MRI framework for optic-nerve imaging.

**Undergraduate Researcher, National Magnetic Resonance Research Center (UMRAM)** 2020 - 2022

- Investigated how selection-field gradients alter magnetic nanoparticle relaxation properties and Magnetic Particle Imaging signal characteristics using Magnetic Particle Spectroscopy.

## Publications

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- E. Şimşek, **A. Topcu**, E. Koç, E. U. Saritas, and A. Koç, "Emotion Classification with Visibility Graphs," *IEEE Signal Processing Letters*, 2025. DOI: [10.1109/LSP.2025.3567033](https://doi.org/10.1109/LSP.2025.3567033).
- **A. Topcu**, C. Liao, T. Çukur, K. Setsompop, and E. U. Saritas, "Super-resolution across RF-encoding and q-space dimensions via physics-driven neural fields for accelerated gSlider diffusion MRI," in *Proceedings of the 33rd Annual Meeting of ISMRM*, Honolulu, May 2025.
- **A. Topcu**, A. Alpman, M. Utkur, and E. U. Saritas, "Boosting Viscosity Sensitivity of Magnetic Particle Imaging Using Selection Field Gradients," *Applied Physics Letters*, 2024. DOI: [10.1063/5.0232365](https://doi.org/10.1063/5.0232365).
- A. Z. Alkilani, **A. Topcu**, T. Çukur, and E. U. Saritas, "Downstream Evaluation on Diffusion Metrics for Susceptibility Artifact Correction via Complex Forward-Distortion Network," in *Proceedings of the 40th Annual Meeting of ESMRMB*, Barcelona, October 2024.
- **A. Topcu**, A. Z. Alkilani, T. Çukur, and E. U. Saritas, "Unsupervised q-Space Interpolation Using Physics-Constrained Coordinate-Based Implicit Network," in *Proceedings of the 32nd Annual Meeting of ISMRM*, Singapore, May 2024.
- **A. Topcu**, A. Alpman, M. Utkur, and E. U. Saritas, "Vicinity Effects of Field Free Point on the Relaxation Behavior of MNPs," *11th International Workshop on Magnetic Particle Imaging*, Virtual Conference, March 2022. DOI: [10.18416/IJMPI.2022.2203055](https://doi.org/10.18416/IJMPI.2022.2203055).

## Honors & Awards

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Fall 2025	<b>UC Berkeley EECS Departmental Fellowship</b> Full tuition and fees plus stipend.
2022 – 2025	<b>Scientific and Technological Research Council of Turkey</b> Monthly stipend and accommodation support during M.Sc. research, project no. 122E162.
2022 – 2025	<b>Bilkent University Graduate Scholarship</b> Full tuition waiver and stipend during M.Sc. studies.
2022	<b>Research Excellence Award</b> Awarded by Bilkent University Faculty of Engineering.
2021	<b>Social Justice and Sustainability Award</b> Received 2021 STS Sustainability Award from Bilkent University Faculty of Engineering. <a href="#">Link</a>
2018 – 2022	<b>High Honor Student, Bilkent University</b> Recognized for high academic achievement during B.Sc. studies.
2019 – 2022	<b>Bilkent University Merit Scholarship</b> 80% tuition waiver during B.Sc. studies.
2016	<b>International Genetically Engineered Machine (iGEM) Golden Award</b> Nominated for Best Education, Best Applied Design, and Public Engagement among 299 teams from 40+ countries, organized by iGEM Foundation. <a href="#">Link</a>
2015 – 2018	<b>METU High-school Merit Scholarship</b> 70% tuition waiver.

## Conferences & Presentations

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ISMRM – Poster, Honolulu, HI	May 2025
ISMRM – Oral + Poster, Singapore	May 2024
IWMPI – Oral Presentation, Virtual Conference	May 2022
Bilkent Graduate Research Conference – Oral Presentation, Ankara, Turkey	Jan. 2025
Bilkent Graduate Research Conference – Oral Presentation, Ankara, Turkey	Jan. 2024
Bilkent Graduate Research Conference – Poster Presentation, Ankara, Turkey	Jan. 2023

## Academic Service

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Journal Reviewer	IEEE Transactions on Medical Imaging, 2025
Conference Reviewer	IEEE/CVF Winter Conference on Applications of Computer Vision (WACV) Workshop, 2025