# Hasan Atakan **Bedel**

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## RESEARCH INTERESTS

- Biomedical Imaging
- Signal Processing
- Neural Data Analysis
- Deep Learning
- Explainable AI (XAI)
- Generative Models

## EDUCATION

**Bilkent University, Ankara, Turkey** | M.Sc., Electrical and Electronics Engineering 2021-Present
**Advisor:** Prof. Tolga Çukur, **CGPA:** (4.00/4.00)

**Middle East Technical University, Ankara, Turkey** | B.Sc., Electrical and Electronics Engineering 2016-2021
**CGPA:** (3.97/4.00)

**Middle East Technical University, Ankara, Turkey** | Minor, Computer Engineering 2016-2021
**CGPA:** (4.00/4.00)

## PUBLICATIONS (GOOGLE SCHOLAR)

**Journal Articles**

**FDB** | Learning Fourier-Constrained Diffusion Bridges for MRI Reconstruction ★13

Mirza, M. U., Dalmaz, O., **Bedel H.A.**, Elmas, G., Korkmaz, Y., Gungor, A., Dar, S. U., & Çukur, T., "Learning Fourier-Constrained Diffusion Bridges for MRI Reconstruction," under review ***Medical Image Analysis***, Aug 2023.

**BolT** | Fused Window Transformers for fMRI Time Series Analysis ★22

**Bedel, H. A.**, Sivgin, I., Dalmaz, O., Dar, S. U., & Çukur, T., "BolT: Fused Window Transformers for fMRI Time Series Analysis," in *Medical Image Analysis*, vol. 88, pp. 102841, Aug 2023. DOI: 10.1016/j.media.2023.102841

**DreaMR** | Diffusion-driven Counterfactual Explanation for Functional MRI ★3

**Bedel, H. A.**, & Çukur, T., "DreaMR: Diffusion-driven Counterfactual Explanation for Functional MRI," under review ***IEEE Transactions on Medical Imaging***, Jul 2023.

**SynDiff** | Adversarial Diffusion for Medical Image Translation ★134

Özbey, M., Dalmaz, O., Dar, S. U., **Bedel, H. A.**, Özturk, Ş., Güngör, A., Çukur, T., "Unsupervised Medical Image Translation with Adversarial Diffusion Models," in ***IEEE Transactions on Medical Imaging***, DOI: 10.1109/TMI.2023.3290149.

**AdaDiff** | Adaptive Diffusion Priors for Accelerated MRI Reconstruction ★30

Güngör, A., Dar, S. U., Öztürk, Ş., Korkmaz, Y., **Bedel, H. A.**, Elmas, G., ... & Çukur, T., "Adaptive Diffusion Priors for Accelerated MRI Reconstruction," in ***Medical Image Analysis***, vol. 88, pp. 102872, Jun 2023. DOI: 10.1016/j.media.2023.102872

**GraphCorr** | A Plug-in Graph Neural Network for fMRI Analysis

Sivgin, I*, **Bedel, H. A.***, Öztürk, Ş., & Çukur, T. (2023), "A Plug-In Graph Neural Network to Boost Temporal Sensitivity in fMRI Analysis," under revision ***IEEE Journal of Biomedical and Health Informatics***, Jun 2023. *:equal contribution

**Peer-Reviewed Conference Proceedings**

**Bedel, H. A.** and Cukur, T., "Employing Transformer Encoders for Enhanced Functional Connectivity Mapping" in 31st Signal Processing and Communications Applications Conference (SIU), Istanbul, Jul 2023. (oral, Presented on-site)

**Bedel, H. A.** , Sıvgın, I., Dalmaz, O., Dar, S. U. H., and Cukur, T., "Fused Window Attention for Sensitive fMRI Data Analysis" in 31st annual meeting of International Society for Magnetic Resonance Imaging (ISMRM), Toronto, Jun 2023. (oral, Presented on-site)

Dalmaz, O., Özbey, M., **Bedel H. A.**, Dar, S. U. H., Özturk Ş., Güngör, A., and Çukur, T., "Cycle-Consistent Adversarial Diffusion For Unsupervised Medical Image Translation," in IEEE 20th International Symposium on Biomedical Imaging (ISBI), Virtual Conference, Apr. 2023. (Presented online)

Özbey, M., Dalmaz, O., **Bedel, H. A.**, Dar, S. U. H., Özturk, Ş., Güngör, A., and Çukur, T., "Adversarial Diffusion Models for Unsupervised Medical Image Synthesis," NeurIPS Medical Imaging Meets, Virtual Conference, Dec. 2022. (Presented online)

## ACADEMIC DUTIES

### Program Committee

- **2023 NeurIPS**: Neural Information Processing Systems
  - Medical Imaging Meets NeurIPS
  - Workshop on Diffusion Models

### Reviewer

- **IEEE TMI**: IEEE Transactions on Medical Imaging
- **Melba**: The Journal of Machine Learning for Biomedical Imaging
- **Frontiers in Neuroscience**
- **2024 3DCV**: International Conference on 3D Vision

## ACADEMIC EXPERIENCE

### Graduate Research Assistant | National Magnetic Resonance Research Center 2021-Present

I am part of the Imaging and Computational Neuroscience (ICON) Lab. My work is supported by the Scientific and Technological Research Council of Turkey with project grant 121N029 at Bilkent University in Ankara, Turkey.

### Graduate Teaching Assistant | Bilkent University, Ankara, Turkey 2021-Present

- EE 321: Signals and Systems (Fall 2022, Spring 2023)
- EE 314: Digital Electronics (Spring 2022, Fall 2023)
- EE 202: Circuit Theory (Fall 2021)

### Undergraduate Research Assistant | Center for Image Analysis 2019-2021

During my undergraduate studies at Middle East Technical University in Ankara, Turkey, I was involved in the Electrical and Electronic Engineering (EEE) Undergraduate Student Academic Research (STAR) Program under Prof. Aydin Alatan. I developed a complex stereo-camera array and software for accurate calibration and precise depth map alignment of the cameras to compile a depth-inclusive stereo vision dataset for machine learning applications.

## HONORS AND AWARDS

### Best Signal Processing Paper Award 2022

The 30th IEEE Conference on Signal Processing and Communications Applications (SIU) Best Signal Processing Paper Award, Safranbolu 2022.

### Scientist Supporting Program Scholarship 2021-present

Merit-based monthly stipend by the Scientific and Technological Research Council of Turkey during M.Sc.

### Bilkent University Comprehensive Scholarship 2021-present

M.Sc. full tuition, stipend, and accommodation.

### Ranked 3 2021

Ranked third in Middle East Technical University's 2021 graduating class.

### Bülent Kerim Altay Prize 2016-2021

Thrice awarded by Middle East Technical University's EE Department for academic excellence.

## SKILLS

### Programming

- AI - Python, Pytorch, Tensorflow, Hugging Face, LangChain
- C/C++ - STL, Pointers, Templates, OOP, Qt(basic)
- Other - JAVA, SQL, MATLAB, HTML, CSS, JavaScript, VueJS, Python

### Tools/Others

- Scripting(Bash, Python), git, GitHub Actions, CI/CD, Linux/Unix, Docker
- LaTeX, Visual Studio Code, IntelliJ IDEA, Word, PowerPoint, Excel