Bahadır Alp Barlas

Department of Electrical Engineering
at University of Sourhern California, Los Angeles, CA, USA ✉ *email: bbarlas@usc.edu*

Research Interests

Magnetic Resonance Imaging, MRI Pulse Sequence Programming, RF Pulse Design; Image Reconstruction, Processing, Analysis; Signal Processing.

Education

Aug 2022 **University of Southern California**, *Los Angeles, CA, USA*
PhD, Department of Electrical Engineering
Advisor: Prof. Krishna S Nayak
Expected Graduation Date: May 2027.

Aug 2019 **Bilkent University**, *Ankara, Turkey*
Aug 2022 *M.Sc., Department of Electrical and Electronics Engineering*
Advisor: Assoc. Prof. Emine Ulku Saritas
Thesis: Sheared 2DRF Pulse for High-Resolution Reduced-FOV MRI
CGPA: 3.96/4.00.

Sep 2014 **Bilkent University**, *Ankara, Turkey*
Jun 2019 *B.Sc., Department of Electrical and Electronics Engineering*
CGPA: 3.57/4.00.

Sep 2010 **Eskisehir Atayurt Science High School**, *Eskisehir, Turkey*
Jun 2014 *CGPA: 96.5/100.*

Honors and Awards

2021 **ISMRM Summa Cum Laude** Merit Award given to abstracts in the top **5%**, for the first-author work "Off-Resonance Robustness in Reduced FOV Imaging Using Sheared 2DRF Excitation" presented at the 2021 Annual Meeting of ISMRM, 2021

2020 Bilkent University, Department of Electrical and Electronics Engineering, **Exceptional Teaching Assistant Performance Award** in Fall 2020

2019–Present Bilkent University Graduate Study Comprehensive Scholarship: full tuition waiver and stipend during the Master of Science program

2019 Ranked 880$^{\text{th}}$ among 300,000 candidates in Turkish Academic Personnel and Postgraduate Education Entrance Exam (ALES)

2014–2019 Bilkent University Undergraduate Study Comprehensive Scholarship: full tuition waiver and stipend during the Bachelor of Science program

2014 **Ranked 329$^{\text{th}}$ among 2,200,000 candidates** in nationwide Turkish National University Entrance exam (LYS)

Journal Publications

[1] **Barlas BA**, Bahadir CD, Kafali SG, Yilmaz U, Saritas EU. Sheared 2D RF excitation for off-resonance robustness and fat suppression in reduced field-of-view imaging. Magn Reson Med. 2023;88(6):2504-2519.

[2] Eren OC, **Barlas BA**, Saritas EU. "2D RF pulse design for optimized reduced field-of-view imaging at 1.5T and 3T". Magn Reson Imaging 2021;85:210-216, DOI: 10.1016/j.mri.2021.10.021.

Conferences Publications

[1] **Barlas BA**, Keskin K, Hargreaves BA, Nayak KS. "Accelerated MRI near metallic implants at 0.55T using hexagonal sampling". In Proceedings of the 2023 Annual Meeting of ISMRM, 2023. p. 4647.

[2] **Barlas BA**, Saritas EU. "Making reduced FOV imaging applicable on low-cost MRI systems: A sheared 2DRF excitation approach". Digital Poster, the 2022 Annual Meeting of ISMRM, London, England, United Kingdom, 2022.

[3] **Barlas BA**, Bahadir CD, Kafali SG, Yilmaz U, Saritas EU. "Off-resonance robustness in reduced FOV imaging using sheared 2DRF excitation". In Proceedings of the 2021 Annual Meeting of ISMRM, 2021. p. 779.

Presentations

[1] Oral Presentation: "Reduced FOV imaging with unlimited slice coverage and enhanced off-resonance robustness using sheared 2D RF". Workshop on MRI Acquisition & Reconstruction, Sep 2021.

[2] Oral Presentation: "Off-resonance robustness in reduced FOV imaging using sheared 2DRF excitation". The 2021 Annual Meeting of ISMRM, 2021.

[3] Oral Presentation: "Off-resonance robustness in reduced FOV imaging using sheared 2DRF excitation". Bilkent University IEEE Graduate Research Conference, 2021.

Academic Experience

Research Assistance

2022–Present **Dynamic Imaging Science Center (DISC)**, *University of Southern California.*

2019–2022 **National Magnetic Resonance Research Center (UMRAM)**, *Bilkent University.*

Teaching Assistance

2019–2022 **Department of Electrical and Electronics Engineering**, *Bilkent University.*

- EEE 102: Introduction to Digital Circuit Design
- EEE 202: Circuit Theory
- EEE 447/547: Introduction to Robotics
- EEE 211: Analog Electronics

Internships

Jun 2017 – Jul 2017 **Tusaş Engine Industries (TEI)**, *Eskisehir, Turkey*
Implemented a Buck Converter circuit with FPGA derived closed-loop control.

Aug 2018 – Sep 2018 **METASOFT**, *Eskisehir, Turkey*
Implemented an organization based mobile application using Ionic together with a main server using Flask framework.

Other Projects

Non-Cartesian SPIRiT Reconstruction (Team of 2),
Implementation of Conjugate Gradient (CG) and Projection onto Convex Sets (POCS) based non-Cartesian SPIRiT reconstruction techniques using various gridding operations.

Classification of fMRI Images (Team of 3),
Implementation of Support Vector Machine (SVM), Logistic Regression and k-nearest Neighbors (KNN) algorithms without using machine learning libraries.

MRI Aliasing Artifact Correction (Team of 3),
Aliasing artifact correction via implementation of a robust artificial neural networks for k-space interpolation (RAKI), U-Net based deep learning, generative adversarial networks with U-Net based deep learning.

MRI Simulator for a GRE Sequence,
Excitation profiles of gradient echo (GRE) sequence with varying TBW of the RF pulse were found and analyzed via Bloch simulations.

Programming Skills

Technical Skills	Matlab, SIEMENS IDEA Sequence Programming, C++, Python, VHDL, Java
Frameworks	Flask, MySQL
Tools	LaTeX, Illustrator, LTSpice

Last updated: October 19, 2023