Aditya Ashok Bhosale

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PROFESSIONAL SUMMARY

Ph.D. researcher with 4+ years of experience in RF resonator design, MR imaging hardware development, and simulation for ultra-high field and low-field MRI systems. Proficient in RF modeling, coil design, and image reconstruction, with a track record of peer-reviewed publications and innovative hardware solutions. Skilled in COMSOL, CST, HFSS, MATLAB, and Python for simulation and design optimization.

EDUCATION

University at Buffalo, The State University of New York, School of Engineering and Applied Sciences
Ph.D. Biomedical Engineering, CGPA: 3.547/4.00 *August 2021 - Present*

University at Buffalo, The State University of New York, School of Engineering and Applied Sciences
MS Biomedical Engineering, CGPA: 3.47/4.00 *August 2019 -May 2021*

University of Mumbai, MGM's College of Engineering and Technology, Navi Mumbai
BE Biomedical Engineering, CGPA: 7.93/10.00 *August 2014 - May 2018*

RESEARCH EXPERIENCE

Dr. Zhang's Magnetic resonance simulation research laboratory, University at Buffalo, Buffalo, New York
Ph.D. Researcher *October 2020-Present*

- Designed and fabricated RF resonators (dipoles, LC loops, and microstrip transmission lines) for advanced MR imaging applications.
- Investigated safety and performance challenges in ultra-high field MRI (7T), proposing innovative RF transceiver array systems for musculoskeletal imaging.
- Developed simulation models using COMSOL, CST Microwave Studio, and Ansys HFSS to optimize RF coil systems incorporating high-dielectric materials.
- Designed wearable imaging hardware to enhance sensitivity and reduce image acquisition time.
- Created a MATLAB-based UI application to streamline resonant frequency calculations of capacitively terminated microstrip lines.

PROFESSIONAL EXPERIENCE

Neuro42,Inc. , San Francisco, California
Radio Frequency Engineer Intern *May 2023 – August 2023*

- Developed and tested RF coil systems for ultra-low field (70mT) portable MR imaging, improving imaging performance.
- Designed a 16-leg birdcage volume coil and proposed phased array configurations with figure-8 coils for next-generation scanners.
- Prototyped phased array systems, including active detuning circuits and synchronized DC biasing gates, ensuring seamless image acquisition.
- Conducted phantom imaging experiments, troubleshooting technical issues to optimize performance and signal quality.
- Collaborated with engineering teams to refine coil designs for future iterations of Neuro42's GEN-I portable scanner.

Cloud nine maternity hospitals, Vashi, Navi Mumbai
Biomedical Engineering Intern *September 2018-December 2018*

- Calibrated and maintained biomedical equipment, including ventilators, neonatal warmers, defibrillators, and NST machines.
- Trained healthcare personnel on equipment usage, performed safety tests, and resolved technical malfunctions.
- Developed biomedical equipment reports by analyzing trends and ensuring compliance with safety protocols.

SKILLSET

Professional Strengths: Electrical Circuit and Designing, Bioinstrumentation, RF modeling and simulation, Image Reconstruction, 3D Printing, 3D Modeling, Machine Learning, Medical Imaging | **Programming:** Python, MATLAB, Assembly language | **Microsoft Office**: Excel, PowerPoint, Word, Outlook | **Simulation**: COMSOL Multiphysics, CST Microwave Studio, Antenna Magus, ANSYS, AutoCAD, Keysight ADS| **Operating systems**: Windows, Macintosh, Linux

ACADEMIC PROJECTS

- Design of an Inductively compensated parallel line 3-section coupler at 3 GHz *Fall 2021*

- Pattern recognition aid to predict the abnormalities in the vertebral column structure *Spring 2020*
- [Undergraduate]Development of power supply for the prototype X-ray machine. *May 2018*

PEER-REVIEWED PUBLICATIONS

- Bhosale AA, Zhao Y, Zhang X (2024) Electric field and SAR reduction in high-impedance RF arrays by using high permittivity materials for 7T MR imaging. PLoS ONE 19(7): e0305464.https://doi.org/10.1371/journal.pone.0305464

CONFERENCE ABSTRACTS

ISMRM & ISMRT Annual Meeting & Exhibition, Singapore *May 2024*

- A Solenoidal Dipole for Human Finger/Small Sample Imaging at 7T MR Imaging: A Comparison Study.
- A numerical investigation of meander and solenoidal dipole antenna array configurations for 7T MR applications.
- Numerical Study of Superconducting, Low Temperature and Room Temperature RF Coils at Ultra-Low Field 70mT/3MHz MRI.

ISMRM & ISMRT Annual Meeting & Exhibition, Toronto, ON, Canada *June 2023*

- Investigating the Optimal Number of Channels in an Array System for Human Head Imaging at 7T
- A Systematic Comparison of Different Dipole Antenna Array Configurations for Knee Imaging Applications at 7T.
- Performance and B1 Efficiency Analysis of Different Dipole Antenna Types at 7T.

Joint Annual Meeting ISMRM-ESMRMB & ISMRT 31st Annual Meeting, London, England, UK *May 2022*

- A 15-channel End-coated Half-wave Dipole Antenna Array System for Foot/Ankle/Calf Imaging at 7T
- A Dielectric Material Coated Half-Wave Dipole antenna for Ultrahigh Field MRI at 7T/300MHz
- An 8-Channel End-Coated Half-Wave Dipole Antenna Array for Knee Imaging at 7T
- An 8-Channel High-permittivity Dielectric Material-Coated Half-Wave Dipole Antenna Array for Knee Imaging at 7T
- B1 field flattening and length control of half-wave dipole antenna with discrete dielectric coating
- 13-Channel hybrid array system for MR foot/ankle imaging at 7 Tesla

ISMRM & SMRT Annual Meeting & Exhibition *May 2021*

- High dielectric sheet to reduce SAR in self-decoupled RF coils
- 16-Channel dielectric material-coated dipole antenna array system for MR foot/ankle imaging at 7 Tesla

Awards & Honors

- SEAS Dean's Graduate Achievement Award Nominee, **University at Buffalo, Buffalo, New York**
- Educational Trainee Stipend, **2023 ISMRM & ISMRT Annual Meeting & Exhibition, Toronto, Canada**
- Educational Trainee Stipend, **2022 Joint Annual Meeting ISMRM-ESMRMB & ISMRT 31st Annual Meeting, London, England, UK**
- Educational Trainee Stipend, **2021 ISMRM & SMRT Annual Meeting & Exhibition**