Sadri Guler

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Prominent electromagnetics engineer with intensive experience in both software and hardware development

Education

PhD in Health Technologies *at Technical University of Denmark* — Copenhagen, Denmark
PhD Thesis: Shielded coaxial cable coils for whole head and neck imaging at 7T MRI — *Oct. 2020 – Dec. 2023*

Master's in Electrical and Electronics Engineering *at Middle East Technical University* — Ankara, Turkey
Specialization: Antennas, Radars, and Microwave Systems, GPA: 3.86/4.00 — *Sep. 2016 – Sep. 2019*
Master Thesis: Novel strategies for second-kind integral equations to analyze perfect electric conductors

Bachelor's in Electrical and Electronics Engineering *at Middle East Technical University* — Ankara, Turkey
Specialization: Antennas, Radars, and Microwave Systems, GPA: 3.01/4.00 — *Sep. 2011 – Jun. 2016*

Experience

DeepSpin — Berlin, Germany
MRI Engineer — *Sep. 2024 – Present*

- Developed testing algorithms for performance and stability evaluation, and debugging of the ultra-low field MRI scanner
- Tested the MRI hardware, i.e. low noise amplifiers, high power circuits, RF and DC coils, matching and tuning circuits
- Integrated, troubleshooted and optimizated of the MRI sub-system elements with the software and hardware engineers
- Performed MRI signal analysis and sequence optimization to get the images in the developed prototype
- Defined the system requirements of the new MRI prototype by Distillation of EMI/EMC standards, i.e. IEC 61000, CISPR 11

Nekodu Technology — Izmir, Turkey
Researcher — *Mar. 2024 – Jun. 2024*

- Performed literature review on the diagnosis of intracranial hemorrhage (ICH) with deep learning tools
- Built the coding library to train and test neural networks on the open datasets for the classification and labeling of ICH

Danish Research Centre for Magnetic Resonance (DRCMR), University of Copenhagen — Copenhagen, Denmark
Ph.D. Researcher — *Oct. 2020 – Dec. 2023*

- Explained the working mechanism of a specific RF sensor, i.e. shielded coaxial cable coil, used at 7T MRI systems
- Performed RF sensor (multi-channel coils) modeling and electromagnetic simulations for 7T human MRI scanners
- Performed validation and verification of a novel RF sensor in the lab and 7T scanner to image the human head and neck
- Developed algorithms to analyze magnetic field shimming and worst-case specific absorption rates for coil arrays
- Supervised students to develop neural networks to estimate subject-specific SAR from MRI data

Nanomagnetics Instruments — Ankara, Turkey
R&D Engineer — *Nov. 2019 – Aug. 2020*

- Designed algorithms of a gigapixel imaging system: image filtering, stitching, object detection and tracking
- Coded the proof-of-concept imaging algorithms by utilizing GPU computation on a Jetson Nano kit
- Analyzed discrete low-pass filters on an FPGA to optimize physical space allocation of a fixed point multiplication

Computational Electomagnetics at Middle East Technical University (CEMMETU) — Ankara, Turkey
Graduate Researcher — *Jun. 2016 – Sep. 2020*

- Increased the accuracy of electromagnetic surface integral equation methods with mixed discretization functions
- Led industrial projects and developed efficient and accurate Maxwell solwers for radar analysis toolboxes with a team
- Programmed computational electromagnetic solvers to analyze monostatic radar scattering
- Performed electromagnetic simulations of antennas, aircrafts, and optical metamaterials in simulation environment
- Programmed 3D mesh generator algorithms of various structures such as chirals, cuboids, spheres, and hexagonal prisms
- Supervised students on research projects regarding optical metamaterials, radar cross section analysis, and optimization and fabrication of RFID antennas

Undergraduate Researcher — *Jun. 2014 – Jun. 2016*

- Modeled and simulated various electromagnetic problems with multilevel fast multipole algorithm
- Performed genetic algorithm optimizations of antennas and metamaterials
- Modeled, simulated and prototyped inkjet printed pixel antennas

Computational Electromagnetics Laboratory at KAUST — Jeddah, Saudi Arabia
Visiting Researcher — *Jun. 2017 – Aug. 2017*

- Analyzed discretization schemes of electromagnetic integral equations to improve accuracy

Selected Publications

Journal Papers

- **S. Güler**, M. Povazan, V. Zhurbenko, and I. Zivkovic. “An 8Tx/32Rx head-neck coil at 7T by combining 2Tx/32Rx Nova coil with 6Tx shielded coaxial cable elements.” Magnetic Resonance in Medicine 93.2 (2025): 864-872.
- G. Costa, M. M. Paulides, **S. Güler**, and I. Zivkovic. “Less is more? Performance of loops without distributed capacitors for 7 T MRI applications.” Magnetic Resonance Imaging (2025): 110420.
- **S. Güler**, I. Zivkovic, V. O. Boer, V. Zhurbenko, and E. T. Petersen. “The mode of operation of high-impedance coils and shielded coaxial cable coils: A comparative study.” NMR in Biomedicine 38.8 (2025): e70071.
- **S. Güler**, B. Karaosmanoğlu, and Ö. Ergül. “Design, simulation, and fabrication of a novel type of inkjet-printed pixel antennas.” Progress in Electromagnetics Research Letters, 64 (2016): 51–55.

International Conferences

- **S. Güler**, V. Zhurbenko, I. Zivkovic, H. Christensen, S. Rosenbaum, I. B. Havsteen, E. T. Petersen. “Transforming two channel Nova head coil into an eight-channel head and neck array using SCC elements with 32 channel receive array at 7T MRI,” in Proceedings of the 32nd annual meeting of ISMRM, 2023.
- **S. Güler**, V. Zhurbenko, I. Zivkovic, V. O. Boer, and E. T. Petersen. "Second resonance mode ensure intrinsic low coupling between elements on shielded-coaxial-cable coil designs,” in Proceedings of the 31st annual meeting of ISMRM, 2022.
- **S. Güler**, G. Costa, V. O. Boer, M. Paulides, E. T. Petersen, and I. Zivkovic. “Shielded-coaxial-cable coils - the array configuration for maximized central SNR at 7T MRI,” in Proceedings of the 31st annual meeting of ISMRM, 2022.

Projects

Novel MRI transceive array coil design and manufacture at ultra-high field	2020 – 2023
Efficient scattering analysis tool for airborne missiles	2018 – 2020
Fast and accurate RCS analysis software development	2016 – 2019
Design of X-Band IMUX and OMUX for satellite communication systems	2015 – 2017
Simulations of microwave systems for reliable diagnosis of breast cancer	2013 – 2015

Technical Skills

Numerical Methods: Method of Moments, Finite Difference Time Domain, and Finite Element Method
Programming: Algorithms & Data Structures, OOP, Parallel Programming (MPI), GPU programming, Deep Learning
Languages: C/C++, CUDA, Fortran 95, Matlab, Java, Python, Perl
Simulation, CAD Tools: CST Microwave Studio, 3D printing (Prusa), HFSS, Siemens NX, LTspice
Libraries: Python; *Plotly, Pandas, NumPy, scikit-rf, PyTorch, OpenCV, Matplotlib. Fortran 95; PETSc.*

References

Irena Zivkovic *i.zivkovic@tue.nl*
Asst. Prof. in Computer, Department of Electrical Engineering at TU Eindhoven, the Netherlands
Co-supervisor of Ph.D. project

Özgür Ergül *ozergul@metu.edu.tr*
Prof. in Electrical and Electronics Engineering at METU, Turkey
M.Sc. Advisor and PI of Computational Electromagnetics at METU

Interest & Hobbies

Lindy Hop, History, Travel, Cycling, Photography, and Coding