Nana K. Owusu
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PROFESSIONAL SUMMARY

Results-driven biomedical researcher with over 10 years of experience in MRI research and translational medical technologies. Expertise in pulse sequence programming, image analysis, and machine learning for diagnostic innovation. Proficient in developing scalable imaging tools and predictive models with applications in liver fibrosis, metabolic diseases, and hepatorenal syndrome diagnostics. Skilled at interdisciplinary collaboration, project management, and translating complex research into actionable solutions for real-world biomedical challenges.

EDUCATION

Ph.D. in Biomedical Engineering
University of Iowa – Iowa City, IA
2015 – 2021

M.S. in Biomedical Engineering
University of Iowa – Iowa City, IA
2013 – 2015

B.S. in Physics (Minors: Mathematics, Chemistry)
Augsburg College – Minneapolis, MN
2009 – 2013

PROFESSIONAL EXPERIENCE

Postdoctoral Research Fellow
Mayo Clinic – Rochester, MN
Aug. 2021 – Present

- Designed and optimized multi-modal MRI/MRE protocols for liver, spleen, and kidney imaging, advancing diagnostic methods for hepatorenal syndrome.
- Applied machine learning to large clinical datasets, producing predictive models for liver fibrosis and metabolic-associated steatotic liver disease (MASLD).
- Streamlined image processing workflows using automated MATLAB and Python scripts, reducing analysis time by 30%.

- Collaborated with multidisciplinary teams of clinicians and engineers to develop scalable solutions for imaging diagnostics.
- Presented findings at international conferences (ISMRM, EASL) and contributed to high-impact journal publications.

Graduate Research Assistant
University of Iowa – Iowa City, IA
Aug. 2013 – Aug. 2021

- Developed and implemented spin-locking MRI pulse sequences, enabling enhanced imaging of pH-sensitive environments in brain tissue.
- Built Arduino-controlled tools for functional imaging experiments, improving precision in laser block stimulation protocols.
- Authored MATLAB- and Python-based graphical user interfaces (GUIs) to visualize MRI pulse sequence data, increasing usability for research teams.
- Automated data cleaning and analysis pipelines for MRI datasets, enhancing reproducibility and scalability across projects.
- Published extensively in peer-reviewed journals and mentored undergraduate research assistants in imaging techniques.

SELECTED PRESENTATIONS

- "Comparison of 2D and 3D MRE Performance in Prediction of MASLD-Associated Risk Factors." ISMRM, Singapore, 2024
- "Improving Diagnostic Performance of MRE in Liver Fibrosis, NASH, and NAFLD Activity Score Prediction." EASL, Dublin, Ireland, 2022
- "Development of an Efficient MRI/MRE Protocol for Multiparametric Assessment of Liver, Spleen, and Kidneys." ISMRM, London, UK, 2022

PUBLICATIONS

- Qiu, C., Glaser, K.J., Owusu, N., et al. “Acquisition efficiency and technical repeatability of dual-frequency 3D vector MR elastography of the liver.” *Journal of Magnetic Resonance Imaging* (2024).
- Chen, J., Owusu, N., et al. "Abdominal MR Elastography with Multiple Driver Arrays: Performance and Repeatability." *Abdominal Radiology* (2023).
- Owusu, N., Magnotta, V.A. "Factors Influencing Daily QA Measurements of MRI Scanners." *Radiological Physics and Technology* (2021).
- Shaffer Jr, J.J., Owusu, N., et al. "Proton Exchange MRI: Applications in Psychiatric Research." *Frontiers in Psychiatry* (2020).

- Owusu, N., et al. "R1ρ Sensitivity to pH and Other Compounds in the Presence of Proteins." *NMR in Biomedicine* (2020).
- Bier, E.A., Owusu, N., et al. “Investigating the IMF cone angle control of Pc3-4 pulsations observed on the ground.” *Journal of Geophysical Research: Space Physics* (2014).

TECHNICAL SKILLS

- **Programming & Tools:** Python, MATLAB, C/C++, Java, GE Pulse Sequence Development
- **Data Science:** Machine learning, predictive modeling, image analysis
- **Imaging Expertise:** MRI/MRE protocols, pulse sequence optimization, multiparametric imaging
- **Platforms:** Windows, Linux, MacOS

AWARDS & RECOGNITIONS

- ISMRM Trainee Travel Award (2015, 2022, 2024)
- Mayo Clinic Hepatology T32 Grant Trainee (2022 – 2024)

ADDITIONAL STRENGTHS

- Skilled at bridging the gap between research and industry applications.
- Strong communicator with experience presenting to global audiences.
- Collaborative team player with a track record of delivering impactful results in multidisciplinary environments.
