Kimberly J. Hemmerling

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Summary

PhD Candidate experienced in advanced analysis and visualization methods for image data. Seeking data scientist or research scientist opportunities to continue using and honing these skills with new projects.

Education

NORTHWESTERN UNIVERSITY

PhD Candidate in Biomedical Engineering

Dec 2024 (Expected) Chicago, IL

- **GPA:** 3.9
- **Awards:** NIH F31 NRSA Predoctoral Fellowship, NIH T32 Training Program, Royal E. Cabell Fellowship
- **Teaching Assistantship:** Experimental Design & Measurement

M.S. in Biomedical Engineering (2023)

CORNELL UNIVERSITY

B.S. in Biomedical Engineering
cum laude, with Honors

May 2019 Ithaca, NY

- **Awards:** Dean's List (4x), Engineering Learning Initiatives Research Grant (2x)

Coursework

GRADUATE: Machine Learning • Digital Signal Processing • Data Structures & Algorithms
UNDERGRADUATE: Computer Vision • Statistics

Outreach

SCIENCE COMMUNICATION SESSION

Co-Creator & Organizer

- Organized a session (2x) at the annual ISMRM meeting (5,000+ attendees) for researchers to interface with a layman audience.
- Assigned researchers to present and discuss their work with local students that were invited to attend the conference.

Skills

PROGRAMMING

MATLAB • R • Python

MISCELLANEOUS

Shell Scripting • Microsoft Office • Git

Links

GitHub **khemmerling**
Publications **orcid.org/0000-0001-9913-492X**

Experience

APPLIED NEURO-VASCULAR IMAGING LAB

Graduate Researcher

Sep 2019 – Present Chicago, IL

- Explore complex spinal cord functional MRI data to identify neural and vascular responses that provide insight into human health and pathology.
- Design multi-component experiments with human subjects using MRI, electromyography, physiological signal monitoring, and clinical interventions.
- Integrate new experimental findings with existing literature to produce high-quality journal publications.

SELECT PROJECTS:

Analysis method for "de-noising" of complex image data

- Formalize a principal component analysis-based technique to remove time-varying physiological noise or motion artifacts from image data.

Visualization tool for functional MRI data quality assurance

- Create a modular tool for visualization of 4D complex functional MRI data (>40 million datapoints each) and physiological signals.
- Use Git/GitHub to develop and publish the tool.

Detection of motor and vascular responses in the spinal cord

- Develop a robust analysis pipeline for spinal cord functional MRI data analysis, combining bespoke methods and open-source image analysis tools.
- Optimize regression models to detect neural activation in spinal cord imaging data at the subject and group levels.

HOSPITAL FOR SPECIAL SURGERY

Biomechanics Research Intern

Jul 2018 – Aug 2018 New York, NY

- Conducted a retrieval analysis study on modular dual mobility implants for total hip arthroplasty to characterize wear and corrosion using optical microscopy, SEM, and FTIR spectroscopy.

DONNELLY RESEARCH LAB

Undergraduate Researcher

Jun 2017 – May 2019 Ithaca, NY

- Developed an image-based metric to assess tissue collagen properties for senior honors thesis project.
- Investigated the effects of glucose intolerance and type II diabetes mellitus on bone tissue using FTIR imaging.

Selected Publications

Hemmerling KJ, et al. Spatial distribution of hand-grasp motor task activity in spinal cord functional magnetic resonance imaging. *Hum Brain Mapp* 2023; 1-15.
Hemmerling KJ, Bright MG. A visualization tool for assessment of spinal cord functional magnetic resonance imaging data quality. *IEEE EMBC* 2021;3391-3394.