RESEARCH INTERESTS

Magnetic Resonance Imaging (quantitative, interventional, low-field), Focused Ultrasound, minimally-invasive therapy

EDUCATION

Vanderbilt University, Nashville, TN, USA 2018
Ph.D Biomedical Engineering
Dissertation: Robust magnetic resonance temperature mapping for real-time guidance of interventional therapies
Advisor: William A. Grissom, Ph.D.

Texas A&M University, College Station, TX, USA 2014
B.S. Biomedical Engineering, *Cum Laude*
Minor: Electrical Engineering

POSITIONS

2018 – Present	**Postdoc Researcher**, National Institute of Standards and Technology
2018-2019	**Postdoc Researcher**, University of Colorado Boulder
Summer 2016	**Visiting Researcher**, UMC Utrecht
2014 – 2018	**Graduate Researcher**, Vanderbilt University Institute of Imaging Science, Institute of Surgery and Engineering
2012, 2013	**Undergraduate Researcher**, UT Southwestern Medical Center
2011 – 2013	**Undergraduate Researcher**, Texas A&M University

HONORS AND AWARDS

External

- Articles "Magnetic Resonance Fingerprinting Part 1" and "Magnetic Resonance Fingerprinting Part 2" were among the top 10% most downloaded articles in JMRI 2019 — 2020
- 1st place Poster - ISMRM Interventional MR Study Group — 2017
- Whitaker International Summer Grantee — 2016
- Finalist - ISTU 2016 Student Awards Competition — 2016
- ISMRM Magna Cum Laude Merit Award - Abstract in top 15% of a major review category — 2015
- 2nd place Talk - ISMRM Interventional MR Study Group — 2015
- Honorable Mention - National Science Foundation Graduate Research Fellowship Program — 2014
- 2nd place - IET Americas "Present Around the World Competition" — 2013

Internal — Vanderbilt University

- Best Power Pitch, VUIIS Annual Retreat — 2018
- Best-Rated Oral Presentation, VUIIS Annual Retreat — 2017
- Grand Prize - Best oral presentation, VUIIS Annual Retreat — 2015
- NIH T32 Surgery and Engineering Trainee — 2016-2018
- School of Engineering IBM Fellow — 2014-2018

Internal — Texas A&M University

- Semifinalist Craig Brown Outstanding Senior Engineer Award — 2014
- J Malon Southerland Aggie Leader Scholar — 2011, 2013
- President's Endowed Scholar — 2010-2014

RESEARCH FUNDING

National Research Council Research Associateship Program 2019-2021
- Postdoctoral fellowship to promote excellence in scientific research conducted at US government laboratories
- Fully funded for 2 years of postdoctoral salary and travel support
- Project: Bridging Image Scales for Validation of Quantitative Magnetic Resonance Imaging

Whitaker Foundation International Summer Grant 2016
- Competitive individual research grant to foster international research collaborations
- Funded for 10 weeks to perform research at the UMC Utrecht in the Netherlands
- Project: Improved magnetic resonance guidance for focused ultrasound thermal therapy in fatty tissues

PATENTS

Magnetic Resonance Fingerprinting Thermometry 2020
- Provisional Patent filed from the National Institute of Standards and Technology, University of Colorado Boulder, and Case Western Reserve University

SERVICE AND ENRICHMENT

Chair, Founder – Rocky Mountain MRI Mash-Up 2020
- First of its kind virtual meeting to bring together researchers in the Mountain Time Zone during Covid-19
- Initiated planning, coordinated 93 participants, 3 co-chairs, and 2.5 days of technical and social content

Co-Organizer – NIST Workshop on Low Field Magnetic Resonance 2019
- Invited and hosted 30 expert speakers and 75 international attendees
- Determined workshop topics and set speaker schedule
- Coordinated pre- and during-workshop networking activities

Permanent Author for Inside Higher Ed GradHacker 2017-2019
- Created monthly articles and idea pitches for a graduate student advice blog
- Served as rotating editor two months a year

Vanderbilt Surgery and Engineering Training Program 2016-2018
- Completed a 16 week surgical rotation in Interventional Radiology
- Observed 40+ hours of real-time procedures, identified areas of need, designed engineering solutions to meet those needs

Women in STEM Mentorship Programs 2012-2016, 2018-2020
- Mentor female engineering students about career paths and opportunities
- Engaged in multiple programs through the Society of Women Engineers and local organizations

Conference Session Moderator
- ISMRM Annual Meeting 2020
- Rocky Mountain MRI Mash Up 2020

Peer Reviewer

- PlosOne	2020
- ISMRM Annual Meeting Submissions	2019, 2020
- Magnetic Resonance in Medicine	2017-2019
- IEEE Transactions on Magnetics	2018
- Vanderbilt Young Scientist Journal	2015-2016

BME Graduate Student Association 2014-2018

- President 2016-2017
- Vice President 2017-2018
- Graduate Student Recruitment Co-Chair 2015-2016

  Planned the annual prospective student recruitment visit. Directed 20 departmental volunteers, coordinated communication between faculty and 30 recruits
- Social and Professional Development Chair 2014-2015

INVITED TALKS

1. **The role of quantitative MRI in FUS treatments: potential and opportunities.** University of Utah School of Medicine Imaging Elevated Symposium, Virtual Format, October 2020
2. **Hacking Grad School and the Rise of Quantiative MRI: Tales from post-grad life at a National Lab.** Case Western Reserve University Biomedical Engineering Imaging Seminar, Virtual Format, October 2020
3. **The Rise of Quantitative MRI and Tales from Post-Grad Life at a National Lab.** Vanderbilt University Institute of Imaging Science Friday Seminars, Vitual Format, October 2020
4. **What Comes After: Surviving the transition out of grad school, how to decide what to do next, and tales from post-grad life at a National Lab.** University of Texas at Dallas Biomedical Engineering Graduate Student Association, Virtual Format, July 2020
5. **Under the hood of Magnetic Resonance Imaging.** National Institute of Standards and Technology PML Mini-Seminar Series, Virtual Format, March 2020
6. **In vivo temperature mapping in variable electromagnetic environments.** National Institute of Standards and Technology Innovations in Measurement Science Competition, Boulder, CO, USA, March 2020
7. **The Rise of Quantitative MRI.** Canon Medical, Cleveland, OH, USA, August 2019
8. **The Rise of Quantitative MRI and how to hack your summer research experience.** Summer Undergraduate Research Fellow Seminar Series, National Institute of Standards and Technology, Boulder, CO, USA, June 2019

9. **Hacking Grad School and What Comes After: My unsolicited advice on surviving grad school and tales from post-grad life at a National Lab.** Biomedical Engineering Graduate Student Association Seminar, Vanderbilt University, Nashville, TN, USA, May 2019

10. **Robust magnetic resonance temperature mapping for real-time guidance of interventional therapies.** Post-Doc and Early-career Association of Researchers Seminar, National Institute of Standards and Technology, Boulder, CO, USA, October 2018

11. **Robust magnetic resonance temperature mapping for real-time guidance of interventional therapies**. National Institute of Standards and Technology, Boulder, CO, USA, December 2017

12. **Orientation-independent MR temperature mapping near ablation probes**. Vanderbilt Institute for Surgery and Engineering Research in Progress Seminar, Nashville, TN, USA, August 2017

13. **Orientation-independent z-shimmed temperature mapping near ablation probes**. Vanderbilt University Institute for Imaging Science Annual Retreat, Nashville, TN, USA, June 2017

14. **Water/fat-separated MR thermometry for online treatment monitoring**. Vanderbilt University Institute for Imaging Science Annual Retreat, Nashville, TN, USA, June 2015

15. **Developing minimally-invasive biosensors from fluorescent dye and red blood cells**. Institute of Engineering and Technology Americas Volunteers Conference, Tornto, Canada, August 2013

JOURNAL PUBLICATIONS

1. Oberdick, S., Russek, S., **Poorman, M.**, Zabow, G., "Observation of iron oxide nanoparticle synthesis in magnetogels using magnetic resonance imaging". Soft Matter 2020.

2. *** Poorman, M.**, Martin, M., Ma, D., McGivney, D., Gulani, V., Griswold, M., Keenan, K., "Magnetic Resonance Fingerprinting Part 1: Potential Uses, Current Challenges, and Recommendations". Journal of Magnetic Resonance Imaging 51 (3) 2020. doi: 10.1002/jmri.26836
   ** This article was one of the top downloaded articles from JMRI in 2019*

3. Quah, K., **Poorman, M.**, Allen, S., Grissom, W., "Simultaneous Multislice MRI Thermometry With a Single Coil Using Incoherent Blipped-Controlled Aliasing." Magnetic Resonance in Medicine 83(2) 2020. doi: 10.1002/mrm.27940

4. ***** McGivney, D., Boyacioglu, R., Jiang, Y., **Poorman, M.**, Seiberlich, N., Gulani, V., Keenan, K., Griswold, M., Ma, D., "Magnetic Resonance Fingerprinting Review Part 2: Technique and Directions". Journal of Magnetic Resonance Imaging 51 (4) **2020**. doi: 10.1002/jmri.26877
   ** This article was one of the top downloaded articles from JMRI in 2019*

5. Ford, J., Ganguly, M., **Poorman, M.**, Grissom, W., Jenkins, M., Chiel, H., Jansen, E.D., "Identifying the role of block width during neural heat block to reduce temperatures during infrared neural inhibition". Lasers in Surgery and Medicine (In Early View) 2019. doi: 10.1002/lsm.23139

6. **Poorman, M.**, Braškutė, I., Bartels, LW., and Grissom, W., "Multi-echo MR thermometry using iterative separation of baseline water and fat images". Magnetic Resonance in Medicine 81(4), 2019. doi: 10.1002/mrm.27567

7. Zhang, Y., **Poorman, M.**, Grissom, W., "Dual echo z-shimmed proton resonance frequency-shift MR thermometry near metallic ablation probes". Magnetic Resonance in Medicine 78(6), 2017. doi: 10.1002/mrm.26634

8. *** Poorman, M.**, Chaplin, V., Wilkens, K., Dockery, M., Giorgio, T., Grissom, W., and Caskey, C., "Open-source, small-animal magnetic resonance-guided focused ultrasound system. Journal of Therapeutic Ultrasound 4(1):22, **2016**. doi: 10.1186/s40349-016-0066-7
** This article was the JTU Article of the Month and featured by the FUS Foundation (https://www.fusfoundation.org/news/open-source-focused-ultrasound-system-now-available-to-researchers-around-the-world)*

9. **Poorman, M.**, and Meissner, K., "Developing minimally invasive biosensors from fluorescent dye and red blood cells." Explorations: The Texas A&M Undergraduate Research Journal, 5:8–10, 2013.

CONFERENCE PROCEEDINGS

1. **Poorman, M.**, Gimbutas, Z., Ma, D., Dienstfrey, A., Keenan, K., "Uncertainty analysis framework for quantifying error propagation in MR Fingerprinting." Submitted to Intl. Soc. Mag. Reson. Med. 29 (2021)

2. **Poorman, M.**, Boyacioglu, R., Grissom, W., Griswold, M., Keenan, K., "A feasibility study of Magnetic Resonance Fingerprinting for multi-contrast temperature mapping in both aqueous and adipose tissues," Intl. Soc. Mag. Reson. Med. 28, Virtual (August 2020)

3. Boyacioglu, R., **Poorman, M.,** Keenan, K., Griswold, M. "sMagnetic Resonance Fingerprinting with Quadratic RF Phase for Continuous Temperature Monitoring in Aqueous Tissues." Intl. Soc. Mag. Reson. Med. 28, Virtual (August 2020)

4. Oberdick, S., Zabow, G., Keenan, K., **Poorman, M.**, Russek, S., "*In-Situ* Visualization of Iron Oxide Nanoparticle Growth Within a Hydrogel Network Using MRI." Conference on Magnetism and Magnetic Materials, Las Vegas, CA (November 2019)

5. **Poorman, M.**, Carnicka, S., Barthold, J., Martin, M., Stupic, K., Neu, C., Keenan, K. "MR imaging of a 3D-printed bioreactor with a dedicated radiofrequency coil for cellular level validation of quantitative MR metrics", Intl. Soc. Mag. Reson. Med. 27, Montreal, Canada (May 2019)

6. Quah, K., **Poorman, M.**, and Grissom, W. ”Simultaneous Multislice MRI Temperature Imaging with a Single Receive Coil”, Intl. Soc. Mag. Reson. Med. 27, Montreal, Canada (May 2019)
7. Martin, M., **Poorman, M.**, Keenan, K., Russek, S., Stupic, K., Low Field NMR Relaxation Measurements of ISMRM/NIST System Phantom. Experimental Nuclear Magnetic Resonance Conference, Pacific Grove, CA (April 2019)
8. Ford, J., Ganguly, M., **Poorman, M.**, Jenkins, M., Chiel, H., Jansen E.D., ”Extending block length to reduce temperatures during near infrared neural inhibition”, American Society for Laser Medicine and Surgery Annual Meeting, Denver, CO (March 2019)
9. Quah, K., **Poorman, M.**, and Grissom, W. ”Simultaneous Multislice MRI Temperature Imaging with a Single Receive Coil”, Biomedical Engineering Society Annual Meeting, Atlanta, GA (October 2018)
10. **Poorman, M.**, Chen, Y., Webster III, R., Barth, E., and Grissom, W., ”MR imaging simulator and optimized multi-echo z-shimmed pulse sequence for temperature mapping near ablation probes”, Intl. Soc. Mag. Reson. Med. 26, Paris, France (June 2018)
11. **Poorman, M.**, Quah, K., and Grissom,W., ”Simultaneous MultiSlice MRI thermometry with incoherent CAIPIRINHA and sparsity-promoting reconstruction”, Intl. Soc. for Therapeutic Ultrasound 18, Nashville, TN (May 2018)
12. Ford, J., Ganguly, M., **Poorman, M.**, Jenkins, M., Chiel, H., Jansen E.D., ”Validating the temperature rise during infrared neural inhibition with increased block width”, SPIE: Optogenetics and Optical Manipulation, San Francisco, CA (January 2018)
13. **Poorman, M.** and Grissom, W., ”Orientation-independent Z-shimmed temperature mapping near ablation probes”, Proc. Intl. Soc. Mag. Reson. Med. 25, Honolulu, USA (May 2017)
14. Chen, Y., **Poorman, M.**, Comber, D., Pitt, EB., Liu, C., Godagel, I., Yu, H., Grissom, W., Barth, E., Webster III, R., ”Treating Epilepsy via Thermal Ablation: Initial Experiments with an MRI-Guided Concentric Tube Robot”, Design of Medical Devices , Minneapolis, MN (April 2017)
15. **Poorman, M.**, Dockery, M., Chaplin, V., Dudzinski, S., Spears, R., Caskey, C., Giorgio, T., and Grissom, W., ”Time-resolved in vivo measurements of FUS immunomodulation in a novel reporter mouse model of breast cancer”, Intl. Soc. for Therapeutic Ultrasound 16, Tel Aviv, IL (March 2016)
16. **Poorman, M.**, Diederich, C., Sommer, G., Butts Pauly, K., and Grissom, W., ”Model-Based Multi-Echo Water/Fat-Separated MR Thermometry”, Proc. Intl. Soc. Mag. Reson. Med. 23, Toronto, CA (June 2015)
17. **Poorman, M.**, Chaplin, V., Wilkens, K., Grissom, W., and Caskey, C., ”Open-source, small-animal magnetic resonance-guided focused ultrasound system”, Proc. Intl. Soc. Mag. Reson. Med. 23, Toronto, CA (June 2015)

18. **Poorman, M.**, Diederich, C., Sommer, G., Butts Pauly, K., and Grissom, W., "Model-Based Multi-Echo Water/Fat-Separated MR Thermometry for MR-guided FUS", Intl. Soc. for Therapeutic Ultrasound 15, Utrecht, NL (April 2015)

19. Dockery, M., **Poorman, M.**, Dudzinksi, S., Barham, W., Chalin, V., Spears, R., Kusunose, J., Yull, F., Caskey, C., Grissom, W., Giorgio, T., "Novel NF-kB Reporter Murine Model of Spontanteous Metastatic Breast Cancer for Spatiotemporal Monitoring of Local and Systemic Therapeutic Response", American Association for Cancer Research Tumor Metastasis, Austin, TX (November 2015)

20. **Poorman, M.**, Ritter, S., and Meissner, K., "Developing minimally invasive biosensors using fluorescent dye and red blood cells", IET Americas Volunteers Conference, Toronto, CA (August 2013)

21. **Poorman, M.**, Anderson, J.,Sherry, A.D., "Optimizing functional beta-cell imaging using magnetic resonance imaging", UTSW SURF Poster Session, Dallas, TX (August 2013)

TEACHING EXPERIENCE

Adventure Science Center Outreach Day 2015, 2017
Led team of 4 engineers in creating booth material. Instructed 50+ visitors ages 3 to 60 in science demonstrations about electromagnetics and photonics.

Teaching Assistant 2016
BME 3892 - Imaging Instrumentation
Instructor: *William A. Grissom, Ph.D.*
Guided 20 students in constructing working benchtop models of imaging modalities (CT, US, and MRI).

Teaching Assistant 2015
BME 3300 - Biomedical Instrumentation
Instructor: *William A. Grissom, Ph.D.*
Led 21 students in hands-on laboratory activities involving Labview, Arduino, and sensors.

PROFESSIONAL SOCIETY MEMBERSHIPS

International Society for Magnetic Resonance in Medicine
International Society for Therapeutic Ultrasound
Society of Women in Engineering

FUN FACTOIDS

- I have thru-hiked the John Muir Trail (211 mile backpacking trail)
- I like traveling and have visited over 12 countries and lived in 3