

**Noel Martin Naughton**  
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## **Education**

- Ph.D. in Mechanical Engineering** **Fall 2019 (expected)**  
University of Illinois at Urbana-Champaign  
Dissertation: *Determination of Skeletal Muscle Microstructure from Diffusion MRI and Relationship with Muscle Quality*  
Research Advisor: John Georgiadis
- M.S. in Mechanical Engineering** **2016**  
University of Illinois at Urbana-Champaign  
Thesis: *A Lattice Boltzmann Method of Diffusion-Weighted Magnetic Resonance Imaging in Skeletal Muscle*
- B.S. in Mechanical Engineering | minor in Catholic Studies; magna cum laude** **2014**  
University of Saint Thomas, Saint Paul, MN

## **Fellowships & Grants**

- NSF Graduate Research Fellowship** **2016 – 2019**  
**XSEDE startup allocation** **2018 – 2019**  
50,000 CPU hours & 5000 GPU hours on SDSC Comet cluster

## **Teaching and Professional Experience**

- Graduate Teaching Assistant** – University of Illinois at Urbana-Champaign **2017, 2019**  
ME 320: Introduction to Heat Transfer  
ME 520: Conductive Heat Transfer
- Mentoring Undergraduates in Science and Engineering (MUSE)** **2018 – 2019**  
Mentored two undergraduate students in data processing and visualization
- Men's Assistant Coach** – Illinois Rowing Club **2015 – 2018**
- Design Engineer** – WTS, St. Paul, MN **2014**
- Undergraduate Teaching Assistant** – University of St. Thomas **2013, 2014**  
Introduction to Heat Transfer  
Finite Element Analysis  
Introduction to Fluid Mechanics Lab

## **Professional Societies**

- International Society for Magnetic Resonance in Medicine (ISMRM)  
Biomedical Engineering Society (BMES)  
Society of Catholic Scientists (SCS)

## **Publications & Patents**

**Naughton, NM**, and Georgiadis JG. *Comparison of two-compartment exchange and continuum models of dMRI in skeletal muscle*. Physics in Medicine & Biology (2019). doi: [10.1088/1361-6560/ab2aa6](https://doi.org/10.1088/1361-6560/ab2aa6).

Plourde, BP, Abraham, JP, Plourde, D, Pakonen, R, Gikling, A, and **Naughton, NM**. WTS LLC, 2016. *Fluid heating system*. U.S. Patent Application 14/954,292.

**Naughton NM**, Plourde BD, Stark JR, Hodis S, Abraham JP. *Impacts of waveforms on the fluid flow, wall shear stress, and flow distribution in cerebral aneurysms and the development of a universal reduced pressure*. *Journal of Biomedical Science and Engineering*. 2014 Jan 2;7(01):7. doi: [10.4236/jbise.2014.71002](https://doi.org/10.4236/jbise.2014.71002).

## **Publications in Process**

**Naughton, NM** and Georgiadis JG. *Global Sensitivity Analysis of Skeletal Muscle dMRI: Effects of Microstructural and Pulse Parameters*. Magnetic Resonance in Medicine, (in revision). [preprint](#)

**Naughton NM**, Tennyson CG, and Georgiadis JG. *Lattice Boltzmann method for simulation of diffusion magnetic resonance imaging physics in heterogeneous tissue models*. *Journal of Computational Physics*, (submitted). arXiv preprint: [arXiv:1907.00908](https://arxiv.org/abs/1907.00908).

Sullivan DJ, Wu X, Gallo NR, **Naughton NM**, Georgiadis JG, and Pelegri AA. *Sensitivity analysis of effective transverse viscoelastic and diffusional properties of tissue with myelinated axons*. (in preparation)

**Naughton NM** and Georgiadis JG. *Histology informed simulations of diffusion MRI in skeletal muscle explains transverse ellipticity of diffusion tensor*. (in preparation).

## **Conference Presentations and Posters**

**Naughton NM** and Georgiadis JG. *Connecting Diffusion MRI to Skeletal Muscle Microstructure: Leveraging Meta-Models and GPU-acceleration*. PEARC19 (July 2019), Chicago, Illinois. (in press). [preprint](#)

**Naughton NM**, Gallo NR, Anderson AT, and Georgiadis JG. *Comparison of dMRI Models for Skeletal Muscle Microstructure Estimations with Numerical Simulations and Myocardial Porcine Phantom*. ISMRM Annual Meeting (May 2019), Montreal, Canada. (poster). [abstract](#)

**Naughton NM**, Jain A, and Georgiadis JG. *Polynomial Meta-Model of Bloch-Torrey Equation for Track-based Regularization of Microstructural Inversion*. ISMRM Annual Meeting (May 2019), Montreal, Canada. (poster). [abstract](#)

**Naughton NM**, Wang A, and Georgiadis JG. *Fascicle Ellipticity as an Explanation of Transverse Anisotropy in Diffusion MRI Measurements of Skeletal Muscle*. ISMRM Annual Meeting (May 2019), Montreal, Canada. (poster). [abstract](#)

**Naughton NM**, Gallo NR, Anderson AT, and Georgiadis JG. *Microstructural Parameter Estimation of Skeletal Muscle using Random Forest Model of dMRI*. ISMRM Annual Meeting (May 2019), Montreal, Canada. (poster). [abstract](#)

**Naughton NM**, Gallo NR, Vaicik M, Anderson AT, Sutton BP, and Georgiadis JG. *Estimation of Extracellular Matrix Diffusion Properties in Decellularized Porcine Myocardium from DTI*. ISMRM Annual Meeting (June 2018), Paris, France. (poster). [abstract](#)

**Naughton NM** and Georgiadis JG. *Effect of Exercise on Myocellular Lipid Content and Diffusion Tensor Imaging Measurements*. Biomedical Engineering Society Annual Meeting (October 2017), Phoenix, Arizona. (platform presentation).

**Naughton NM** and Georgiadis JG. *Effect of Sarcolemma Water Permeability on Muscle DTI Measures Following Exercise*. Biomedical Engineering Society Annual Meeting, (October 2016), Minneapolis, Minnesota. (platform presentation).