

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**
100,000 CPU hours & 1000 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 – Water Tank Solutions, 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

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

Publications & Patents

Naughton, NM and Georgiadis JG. *Global sensitivity analysis of skeletal muscle dMRI: Effects of microstructural and pulse parameters*. Magnetic Resonance in Medicine, (in press).

Naughton NM and Georgiadis JG. *Comparison of two-compartment exchange and continuum models of dMRI in skeletal muscle*. Physics in Medicine and Biology, 2019 Aug 1;64(15):155004. doi: [10.1088/1361-6560/ab2aa6](https://doi.org/10.1088/1361-6560/ab2aa6)

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).

Patents

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.

Publications in Process

Naughton NM, Tennyson CG, and Georgiadis JG. *Lattice Boltzmann method for simulation of diffusion magnetic resonance imaging physics in heterogeneous tissue models*. arXiv pre-print: [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*. Proceedings of the Practice and Experience in Advanced Research Computing on Rise of the Machines (learning) (PEARC '19). p7, (July 2019), Chicago, IL, USA. doi: [10.1145/3332186.3333054](https://doi.org/10.1145/3332186.3333054)

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. (refereed 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. refereed (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. (refereed 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. (refereed 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. (refereed 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).