

# Noel Martin Naughton

[nnaught2@illinois.edu](mailto:nnaught2@illinois.edu)

[noelmnaughton.com](http://noelmnaughton.com)

(651) 503-9041

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## Education

- Ph.D. in Mechanical Engineering** 2016 – 2019  
University of Illinois at Urbana-Champaign, Urbana, IL  
*Diffusion-Weighted MRI of Skeletal Muscle: Estimation of Microstructural Parameters*  
Research Advisor: John Georgiadis
- M.S. in Mechanical Engineering** 2014 – 2016  
University of Illinois at Urbana-Champaign, Urbana, IL  
*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** 2010 – 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

## Professional Experience

- Postdoctoral Research Associate** – University of Illinois at Urbana-Champaign 2020 – present  
Project: *A CyberOctopus that Learns, Evolves, and Adapts* (ONR MURI grant)
- Assistant Rowing Coach** – University of Illinois Rowing Club, Urbana, IL 2015 – 2018
- Graduate Research Assistant** – University of Illinois at Urbana-Champaign 2014 – 2016
- Design Engineer** – Water Tank Solutions, St. Paul, MN 2014

## Teaching Experience

- Graduate Teaching Assistant** – University of Illinois at Urbana-Champaign 2017, 2019  
ME 320: Introduction to Heat Transfer Lab – Fall 2019 List of teachers ranked as excellent by their students; received additional designation of *outstanding*  
ME 520: Conductive Heat Transfer
- Undergraduate Teaching Assistant** – University of St. Thomas, St. Paul, MN 2013, 2014  
ENGR 382: Introduction to Heat Transfer  
ENGR 383: Introduction to Fluid Mechanics Lab  
ETLS 777: Finite Element Analysis

## Community Outreach

- NCSA-NVIDIA AI Hackathon** – Developed hackathon problem and served as jury member 2020
- Mentoring Undergraduates in Science and Engineering (MUSE)** 2018 – 2019  
Mentored two undergraduate students in data processing and visualization
- Magnetic Moment Video Finalist** – ISMRM Annual Meeting, Montreal, Canada ([video link](#)) 2019
- STEM outreach talk** – Urbana Middle School, Urbana, IL 2019
- STEM outreach talk** – Trinity High School, Eagan, MN 2014
- Afterschool STEM Tutor** – Tutor-Mentor Program, University of St. Thomas 2011 – 2012

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## 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)

## Peer-Reviewed Journal Articles

Naughton NM, Tennyson CG, and Georgiadis JG. *A lattice Boltzmann method for simulation of diffusion magnetic resonance imaging physics in multiphase tissue models*. Physical Review E, (in press). [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*. Physics in Medicine and Biology, (in press). doi: [10.1088/1361-6560/aba0cc](https://doi.org/10.1088/1361-6560/aba0cc)

Naughton, NM and Georgiadis JG. *Global sensitivity analysis of skeletal muscle dMRI: Effects of microstructural and pulse parameters*. Magnetic Resonance in Medicine, 2020; 83:1458-1470. doi: [10.1002/mrm.28014](https://doi.org/10.1002/mrm.28014)

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).

## Peer-Reviewed Conference Articles

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)

## Publications in Process

Naughton NM, Sun J, Tekinalp A, Chowdhary G, and Gazzola M. *Elastica: A compliant mechanics environment for soft robotic control*. (under review).

## 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.

## Conference Abstracts

Cahoon SM, Gallo NR, Naughton NM, Anderson AT, and Georgiadis JG. *Regional Intrinsic Properties of Axons and Glia from in vivo MRElastography of Human Corpus Callosum*. Biomedical Engineering Society Annual Meeting, (October 2020), Virtual Meeting.

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Gallo NR, Cahoon SM, Anderson AT, **Naughton NM**, Pelegri AA, and Georgiadis JG. *Variation of In Vivo Anisotropic MRE Metrics in Corpus Callosum: Effect of Aging*. International Society of Magnetic Resonance in Medicine Annual Meeting (August 2020), Virtual Meeting.

**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*. International Society of Magnetic Resonance in Medicine Annual Meeting (May 2019), Montreal, Canada.

**Naughton NM**, Jain A, and Georgiadis JG. *Polynomial Meta-Model of Bloch-Torrey Equation for Track-based Regularization of Microstructural Inversion*. International Society of Magnetic Resonance in Medicine Annual Meeting (May 2019), Montreal, Canada.

**Naughton NM**, Wang A, and Georgiadis JG. *Fascicle Ellipticity as an Explanation of Transverse Anisotropy in Diffusion MRI Measurements of Skeletal Muscle*. International Society of Magnetic Resonance in Medicine Annual Meeting (May 2019), Montreal, Canada.

**Naughton NM**, Gallo NR, Anderson AT, and Georgiadis JG. *Microstructural Parameter Estimation of Skeletal Muscle using Random Forest Model of dMRI*. International Society of Magnetic Resonance in Medicine Annual Meeting (May 2019), Montreal, Canada.

**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*. International Society of Magnetic Resonance in Medicine Annual Meeting (June 2018), Paris, France.

**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.

**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.