Noel Martin Naughton
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Education

Ph.D. in Mechancial Engineering **2016 – 2019**
University of Illinois at Urbana-Champaign
Diffusion-Weighted MRI of Skeletal Muscle: Estimation of Microstructural Parameters.
Research Advisor: John Georgiadis

M.S. in Mechancial Engineering **2014 – 2016**
University of Illinois at Urbana-Champaign
A Lattice Boltzmann Method of Diffusion-Weighted Magnetic Resonance Imaging in Skeletal Muscle | Research Advisor: John Georgiadis

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

Teaching and Professional Experience

Postdoctoral Research Associate – University of Illinois at Urbana-Champaign **2020 – present**
Project: *A CyberOctopus that Learns, Evolves, and Adapts* (ONR MURI project)
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 designation of **outstanding**
ME 520: Conductive Heat Transfer
Assistant 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**
Undergraduate Teaching Assistant – University of St. Thomas **2013, 2014**
ENGR 382: Introduction to Heat Transfer
ENGR 383: Introduction to Fluid Mechanics Lab
ETLS 777: Finite Element Analysis

Community Outreach

UIUC Hackathon – Developed hackathon problem and 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**

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

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

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

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.

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 multiphase tissue models*. arXiv preprint: arXiv:1907.00908. (submitted).

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*. (submitted).

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

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*. ISMRM Annual Meeting (April 2020), Sydney, Australia

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

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. 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. 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. 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. 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. 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.

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.