JAMES MICAH FINLEY

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WORK ADDRESS
Rehabilitation Institute of Chicago
Sensory Motor Performance Program
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EDUCATION

Northwestern University, Evanston, IL
Ph.D. Biomedical Engineering
Degree Expected: 2009

Northwestern University, Evanston, IL
Master of Science – Biomedical Engineering
Thesis Title – *Enhanced Inter-joint Reflex Coupling in the Lower Limb of Individuals with Hemiparetic Stroke*
Degree Received: May, 2007
Grade Point Average: 3.69

Florida A&M University, Tallahassee, FL
Bachelor of Science – Mechanical Engineering, *Summa Cum Laude*
Degree Received: May 2004
Grade Point Average: 3.76

RESEARCH INTERESTS

Coordination of multi-joint of movement
Feedback control strategies in the nervous system
Mechanisms of adaptation in the impaired nervous system

RESEARCH EXPERIENCE

9/04-present **Northwestern University,** Evanston, IL
Graduate Student
Department of Biomedical Engineering (Dr. Eric J. Perreault and Dr. Yasin Y. Dhaher)

- Identified a reciprocal, reflex-mediated coupling between rectus femoris and the hip adductors in individuals with stroke. Results suggest that changes in the excitability of spinal networks may contribute to the development of abnormal coordination patterns observed during hemiparetic gait.
- Simulated experimental findings using a musculoskeletal model to determine if measured coupling could be due to direct muscle stretch.
- Currently quantifying how the nervous system modifies proprioceptive feedback gains to compensate for varying levels of mechanical stability.

1/03-5/03 **FAMU/FSU College of Engineering**, Tallahassee, FL
Research Assistant
Department of Mechanical Engineering (Dr. Carl A. Moore)

- Developed a MATLAB program to quantify the necessary torques for a 3 degree-of-freedom manipulator using inverse dynamics then used this information to determine the specifications for the robot's actuators.

- Investigated a method to identify peak torque requirements for a 3 degree-of-freedom manipulator based on manipulator properties and movement constraints

6/01-8/01 **Carnegie Mellon University,** Pittsburgh, PA
Research Intern
Department of Materials Science and Engineering (Dr. Gregory S. Rohrer)

- Characterized how annealing parameters affected grain orientation and groove structure in high-temperature superconductor nickel substrates using atomic force microscopy and orientation imaging microscopy.

TEACHING EXPERIENCE

1/04-5/04 **FAMU/FSU College of Engineering,** Tallahassee, FL
Teaching Assistant for Dynamic Systems

- Responsible for grading laboratory reports and homework assignments
- Held weekly office hours to assist students with the course material

WORK EXPERIENCE

5/04-8/04 **Medtronic, Inc.,** Minneapolis, MN
Corporate Science and Technologies Intern

- Characterized catheter lumen surface characteristics using scanning electron microscopy (SEM) and laser profilometry
- Quantified the effect of catheter surface properties and flow parameters on virus adsorption and viability using an enzyme linked immunosorbent assay (ELISA) and flow cytometry

5/03-8/03; 5/02-8/02 **Medtronic, Inc.,** Minneapolis, MN
Cardiac Surgery Technologies Intern

- Wrote protocols and performed mechanical testing for devices used for heart-stabilization during beating-heart surgery
- Built test devices used for tissue ablation during the surgical treatment of atrial fibrillation in animal studies

PRESENTATIONS

J.M. Finley, E.J. Perreault, and Y.Y. Dhaher., "Enhanced Inter-Joint Reflex Coupling May Contribute to Impaired Coordination in Hemiparetic Stroke." American Society of Biomechanics in Palo Alto, CA. August 25, 2007

J.M. Finley, E.J. Perreault, and Y.Y. Dhaher., "Heteronymous Reflex Contributions to Circumduction in Stroke." Society for Neuroscience in Atlanta, GA. October 14, 2006.

PUBLICATIONS

J.M. Finley, E.J. Perreault, Y.Y. Dhaher., "Evidence for a Stretch Reflex Coupling Between the Hip Adductors and Knee Extensors following Hemiparetic Stroke.", Experimental Brain Research (in Revision)

AWARDS AND FELLOWSHIPS

National Science Foundation Graduate Research Fellowship, 2005-2008
GEM Ph.D. fellowship in Biomedical Engineering, 2004-2009
Northwestern University Murphy Fellowship in Biomedical Engineering, March 2004

LEADERSHIP EXPERIENCE AND ACADEMIC SERVICE

Member, One Northwestern Graduate Education and Student Innovation Task Force, 2007-present
Project Manager, Get-a-Grip! Outreach Program, VaNTH Engineering Research Center, 2004-2006
Member, VaNTH Engineering Research Center Student Leadership Committee, 2004-2007
Recruiter, Northwestern University Department of Multicultural Affairs, 2004-present
Website Coordinator, Black Graduate Student Association, 2007-present
Corporate Relations Chair, Northwestern Triathlon, 2006-present
Graduate Programs Chair, Black Graduate Student Association, 2005-2006
President, Florida Eta Chapter of the Tau Beta Pi Engineering Honor Society, 2003-2004

PROFESSIONAL AFFILIATIONS

American Society for Engineering Education
American Society of Mechanical Engineers
Institute of Electrical and Electronics Engineers
National Society of Black Engineers
Pi Tau Sigma Mechanical Engineering Honor Society
Society for Neuroscience
Tau Beta Pi Engineering Honor Society

REFERENCES

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