A. Michael West Jr. – Massachusetts Institute of Technology (MIT) Mechanical Engineering Graduate Student
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EDUCATION

Massachusetts Institute of Technology, M.S. Degree in Mechanical Engineering, Class of 2020, GPA: 4.5/5.0
Yale University, ABET accredited B.S. Degree in Mechanical Engineering, Class of 2018, GPA: 3.5/4.0, Major GPA: 3.6/4.0
GRE: Quantitative 166/170, Verbal 158/170, Analytical Writing 4.5/6

QUALIFICATIONS

- Experience in designing, implementing and testing electromechanical systems for researching social, surgical and biomechanical applications.
- Authored reports and gave presentations on advanced robotic technologies.
- Methodical problem solver and creative thinker with excellent leadership, interpersonal, and communication skills.
- Proven abilities to work independently and on a team.
- Experience in controls, dynamics, robotics, mechanical design, electromechanical design, machine learning, biomechanics and neuroscience.

TECHNICAL SKILLS

- Hardware: rapid prototyping using 3D printers, laser cutters, and machine shop tools (mill and lathe).
- Software: CAD (Solidworks, Creo Parametric, LayoutEditor), Programming (C, C++, Matlab, Python & Arduino, Machine Learning), Mujoco, Visual Studio, Microsoft Office.

RESEARCH EXPERIENCE

RESEARCH ASSISTANT, MIT, NEWMAN LABORATORY FOR BIOMECHANICS & HUMAN REHABILITATION, 2018 – PRESENT

- Developing a system that can non-invasively measure a human's motion, force, and impedance in complex manipulation tasks, using the physics simulation engine, Mujoco, and the pose detection software, OpenPose, as tools to gather and analyze kinematic and neuromuscular data.
- Researched how humans estimate hidden mechanical properties, such as stiffness of another's limbs simply by observing their motions. Used MATLAB to simulate motion of a two-link manipulator of varying stiffness. Then asked subjects to estimate the manipulator's stiffness. Presented final results of experiment at the Society of Neuroscience Conference 2019.

RESEARCH STUDENT, YALE BIOMECHANICS & CONTROL LAB, 2017 – 2018

- Designed and conducted an experiment to produce a geometric theory that models how a limb moves based purely on the principal curvatures of the articular surfaces at a joint. Used SolidWorks and machine tools to design and fabricate the experiment's apparatus. Controlled the experiment using an Arduino. Analyzed results in MATLAB. Delivered an oral presentation of final results to faculty and peers.

RESEARCH INTERN, MIT, NEWMAN LABORATORY FOR BIOMECHANICS & HUMAN REHABILITATION, SUMMER 2017

- Conducted a human subject research study, using the Haptic Master Robot to lead subjects in a robot following task. Analyzed the extent to which humans do force control in a broader effort to further understand the internal human control model. Performed all the data and statistical analysis using MATLAB. Delivered a poster presentation of final results to faculty and peers.

RESEARCH STUDENT, YALE UNIVERSITY, INDEPENDENT STUDY, 2017

- Worked as lead design engineer on a low-cost microfluidic device to screen people for diabetes. Responsibilities included understanding Poiseuille's equation in relation to the microcirculatory system to design microfluidic masks using a CAD program called LayoutEditor. Conducted micropipette experiments, using human samples, to determine a threshold for the size of our device. Delivered an oral presentation of final results to faculty and peers.

RESEARCH STUDENT, YALE UNIVERSITY, MEDICAL DEVICE DESIGN & INNOVATION, 2016 – 2017

- Participated in Yale's Medical Device Design program in which students are selected by professors to create innovative medical devices to improve surgical procedures. Collaborated in a team of four Yale undergraduates to design and build a saw guide made of 125 parts to improve sternotomies and decrease complications stemming from sternal non-union. Presented and won third place at the Design of Medical Devices Conference at the University of Minnesota.

RESEARCH INTERN, YALE UNIVERSITY, SOCIAL ROBOTICS LABORATORY, SUMMER 2016

- Design and Manufacturing Engineer for the Maki Expedition Project, a study to determine how infants perceive humanoid robots. Used SolidWorks to model the interior and exterior components of the robot while redesigning its face to perform

certain facial expressions to improve infant-robot interaction. Used Arduino to program movements in the robot's face. Delivered an oral presentation with a live demonstration of final results to faculty and peers.

WORK EXPERIENCE

ROBOTIC DESIGN INTERN, MEDTRONIC, NORTH HAVEN, SUMMER 2018
- Designed and built the first prototype of an articulating endoscope to interface with a surgical robot, using Creo Parametric 3.0. Also implemented its control model using Simuscape 2017.

COMPUTER LAB TECHNICIAN, YALE UNIVERSITY, YALE STUDENT TECHNOLOGY COLLABORATIVE (STC), 2017 – 2018
- Worked as an STC Operations staff member to repair hardware and software issues of on-campus lab computers and students' personal computers.

DESIGN AIDE, YALE UNIVERSITY, CENTER FOR ENGINEERING INNOVATION & DESIGN, 2017 – 2018
- Provided theoretical and technical expertise to students seeking help on design projects in the Yale Center for Engineering Innovation and Design. Specialized in Solidworks, MATLAB, and machine shop tools.

EXTRA-CURRICULAR ACTIVITIES

TREASURER, MIT ACADEMY OF COURAGEOUS MINORITY ENGINEERS, 2019 – PRESENT
- Allocates and manages funds for a group of minority engineers who meet weekly to discuss career goals. Fosters a community of students who support, mentor, and hold each other accountable in their respective academic goals.

PRESIDENT & PLAYER, MIT RUGBY CLUB, 2019 – PRESENT
- Facilitates Rugby club general organization and decision making. Coordinates communication between MIT and the Club.

SMALL GROUP LEADER, MIT SUMMER RESEARCH PROGRAM, SUMMER 2019
- Organized group meetings and events to foster a positive climate for undergraduate minority scientists conducting summer research at MIT. Facilitated conversations between undergraduate interns and their faculty advisors. Provided mentorship for students looking to pursue a graduate degree.

SCIENCE, TECHNOLOGY, ENGINEERING & MATH (STEM) AMBASSADOR, YALE ADMISSIONS OFFICE, 2017 – 2018
- Mentored high school students who have been awarded an early admissions letter to Yale University for their excellent academic achievements and passion to pursue STEM fields. Assisted applicants in making an informed college decision.

PRESIDENT & VICE PRESIDENT, YALE'S NATIONAL SOCIETY OF BLACK ENGINEERS CHAPTER, 2016 – 2017
- Founded a tutoring service at New Haven Academy Elementary School.
- Facilitated chapter meetings and increased comradery through encouraging African-Americans to continue pursuing STEM fields. Assisted in managing organization finances in efforts to sponsor members to attend the national conferences.

VICE PRESIDENT, YALE'S ZETA PSI FRATERNITY CHAPTER, 2016 – 2017
- Served as board member, with the primary role of increasing recruitment, fostering brotherhood, and improving philanthropy.

DEFENSIVE END, YALE UNIVERSITY, VARSITY FOOTBALL, 2014 – 2016
- Responsibilities included 30+ hours a week of learning schemes, film study, appropriate nutritional intake, strength and conditioning, as well as, encouraging and mentoring teammates. Exercised extreme discipline and time management.

HONORS & AWARDS

FORD FOUNDATION FELLOWSHIP, FORD FOUNDATION, 2020
FORD FOUNDATION FELLOWSHIP HONORABLE MENTION, FORD FOUNDATION, 2018
GEM UNIVERSITY ASSOCIATE FELLOWSHIP, MASSACHUSETTS INSTITUTE OF TECHNOLOGY, 2018
UCEM SLOAN SCHOLAR, MASSACHUSETTS INSTITUTE OF TECHNOLOGY, 2018
OGE DIVERSITY FELLOWSHIP, MASSACHUSETTS INSTITUTE OF TECHNOLOGY, 2018
STUDENT DESIGN SHOWCASE, 3RD PLACE, DESIGN OF MEDICAL DEVICES CONFERENCE, 2017

JOURNAL PAPERS

1. **West, A. M.,** Huber, M.E., & Hogan, N. (In Revision). Role of Path Information in Visual Perception of Joint Stiffness. *Journal of Neurophysiology*.

CONFERENCE ABSTRACTS

2. **West, A. M.,** & Hogan, N. (2020, May). An Analysis of Kinematic Hand Synergies During Wire-Harness Installation. PowerPoint presentation at the 2020 *International Conference of Robotics and Automation*, Paris.

3. Huber, M.E., **West, A. M.,** Folinus, C., & Hogan, N. (2019, October). Visual Perception of Joint Stiffness from Multi-Joint Limb Motion. Poster presented at the 2019 *Annual Conference of the Society for Neuroscience*, Chicago, IL.
4. **West, A. M.,** Mandl, H., McCann, C., & Gunawardena, N. (2017, April). A Novel Sternotomy Saw Guide Incorporating Integrated Rigid Fixation. Poster presented at the 2017 *Design of Medical Devices Conference*, Minnesota, MN.