Mike **Hagenow**

PhD Student · University of Wisconsin-Madison · He/Him/His

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Research Interests

Human-Robot Physical Interaction Modeling and Shared Control/Autonomy

Research focuses on answering how shared control and shared autonomy in robotics can assist skilled workers in completing complex and often injury-prone tasks. Broad research interests include non-linear control, applications of learning models (e.g., DMPs, NNs) in human-robot interaction models, and dynamics of physical interaction.

Co-advised by Michael Zinn, Michael Gleicher, and Bilge Mutlu (NASA ULI).

Education

University of Wisconsin - Madison — *Madison, WI*

Ph.D. in Mechanical Engineering — *2018 - In progress*

- Minor: Computer Science
- Advisor: Michael Zinn, Ph.D.

University of Wisconsin - Madison — *Madison, WI*

M.S. in Mechanical Engineering — *2018 - 2019*

- Phi Kappa Phi

Tufts University — *Medford, MA*

B.S. in Mechanical Engineering — *2010 - 2014*

- Tau Beta Pi, Dean's List (7/7 eligible semesters)

Experience

University of Wisconsin - Madison — *Madison, WI*

Graduate Research Assistant — *2019 - Present*

- NSF grant exploring communication in human robot interaction. NASA University Leadership Initiative focused on aircraft manufacturing and development of shared robotic assistants for physically demanding and challenging tasks.

Epic Systems — *Madison, WI*

Manager - MyChart - Technical Services — *2014 - 2017*

- Managed 5-6 direct reports. Development and planning lead for Clinical Data for MyChart. Responsible for technical support for several large hospital contracts. VB Development of internal tools for accounting.

Honors & Awards

2019	**Phi Kappa Phi**, UW-Madison	*Madison, WI*
2018	**Mitchell Fellowship (Instructional Design)**, The Mitchell Institute	*Portland, ME*
2014	**O'Leary Design Award**, Tufts University	*Medford, MA*
2010	**Senator George J. Mitchell Scholarship**, The Mitchell Institute	*Portland, ME*
2009	**Rensselaer Medal**, Rensselaer Polytechnic Institute	*Troy, NY*

Publications

Journal Articles

J1. Hagenow, M., Senft, E., Radwin, R., Gleicher, M., Mutlu, B. and Zinn, M. "Corrective Shared Autonomy for Addressing Task Variability," *IEEE Robotics and Automation Letters*, Submitted.

Conference Papers

C2. **Hagenow, M.**, Zhang, B., G., Mutlu, B., Zinn, M., and Gleicher, M. "Recognizing Orientation Slip in Human Demonstrations," *IEEE International Conference on Robotics and Automation (ICRA)*, Submitted.

C1. W. Hu, Q. Fan, A. H. Nicholas, **M. C. Hagenow**, and A. T. Ohta. "Bubble micro-manipulator for co-operative micro-manipulation," *9th IEEE International Conference on Nano/Micro Engineered and Molecular Systems (IEEE-NEMS)*, Honolulu, HI, Apr. 2014.

Poster Presentations

P2. **M. Hagenow** and M. Zinn. Online Peer Learning Community for Controls Lab Curriculum. *Association for Distance Education and Independent Learning (ADEIL) Conference 2018.*

P1. **M. Hagenow** and M. Zinn. Inquiry-Based Labs for an Introductory Controls Class. *Midwest Robotics Workshop (TTIC) 2018.*

Teaching

Formal Instruction

2020	**Guest Lecturer**, ME739 - Advanced Robotics	*Madison, WI*
2019	**Instructor of Record**, ME346 - Intro to Feedback Controls	*Madison, WI*
2019	**Teaching Assistant**, ME739 - Advanced Robotics (Distance Learning)	*Madison, WI*
2018	**Teaching Assistant**, ME346 - Intro to Feedback Controls	*Madison, WI*
2018/19	**Teaching Assistant**, ME446 - Automatic Controls (Distance Learning)	*Madison, WI*
2018	**Teaching Assistant**, ME370 - Energy Systems Laboratory	*Madison, WI*
2013/14	**Teaching Assistant**, COMP11 - Intro to Computer Science	*Medford, MA*

Extracurricular

Teaching-As-Research Project *Madison, WI*

Delta Program (Guest Teaching) *2019*

- How does problem-based learning instruction of loop-shaping in the frequency domain affect student adaptive expertise and student perceived value of material?
- https://delta.wisc.edu/internship-overview/

Tutorial Contributor *Online*

Controls Tutorials Matlab Simulink *2018-2020*

- Developing real-time simulink tutorial for Lead motor position control (In Progress). Tutorials will be hosted on the official website (http://ctms.engin.umich.edu).

Lab Development *Madison, WI*

Intro to Feedback Controls *2018*

- Developed real time control platform using Simulink and three labs (system identification, PID, and Frequency Domain Lead Control). Fabricated 10 control platforms using industrial connectors and hardware (B&R Automation).

Referee Services

Journal

2020 **RAL**, IEEE Robotics and Automation Letters

Conferences

2021 **ICRA**, IEEE International Conference on Robotics and Automation

Technical Skills

Programming	Python, C/C++, Java, HTML/CSS/JS
Tools	ROS, V-REP, git, LaTeX, CMake
Robotic Platforms	Franka Emika Panda, Rethink Sawyer, UR3/UR5, Kinova Mico/Jaco
Engineering	Solidworks, Matlab, Simulink (control system design certified), Labview, EES

Recent Service

2019-20	**Workshop Volunteer**, UW-Madison New Engineering Orientation	*Madison, WI*
2018-20	**Lab Tours (3-5 Annually)**, REACH Lab	*Madison, WI*
2018-19	**Volunteer Tutor - Algebra/Geometry**, West High School	*Madison, WI*
2017-19	**Alumni Interviewer**, Tufts University	*WI*
2019	**Event Supervisor - Mechatronics and Aerial Scrambler**, Science Olympiad	*WI*