Waiman Meinhold

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Education

Georgia Institute of Technology May 2021
Ph.D in Robotics

University of California, Berkeley May 2016
B.S. in Mechanical Engineering, Minor in Natural Resource Management

Skills

Software/Programming: MATLAB (Machine learning, Data analysis), Solidworks, LabVIEW, Python, Java, COMSOL, R, Microsoft Office (Excel, Powerpoint, Word), LaTeX
Mechanical: Manual and CNC machining, Mechanical design, Prototyping, Robotics, System dynamics, CAD, DFM
Lab: Instrumentation, Sensing, Mechanical/Materials testing, Data acquisition, Human subjects research (IRB protocols, Design of experiments, EEG, EMG, TMS, TES, MRI, Statistics)

Experience

Postdoctoral Fellow May 2021 - June 2023
Biorobotics and Human Modeling Laboratory, Georgia Institute of Technology *Atlanta, GA*

- Developed precision MRI guided robots and control methods, along with wearable healthcare monitoring systems
- Developed analysis and prediction methods for sensorimotor responses
- Collaborated with clinical partners to produce reflex stimulation prototypes now in clinical evaluation, and worked with an industry collaborator to generate production ready software and hardware
- Demonstrated privacy and security implications of continuous physiological measurements
- Wrote and planned funding proposals, reports to funding agencies and collaboration pitches to industry and academic groups including a multi institution ERC proposal ($21M+), the largest NSF award
- Managed multi-institution interdisciplinary teams to develop and evaluate novel medical devices, results include multiple invention disclosures, undergraduate research awards, and publications

Graduate Research Assistant August 2016 - May 2021
Biorobotics and Human Modeling Laboratory, Georgia Institute of Technology *Atlanta, GA*

- Developed a robot and visual control system for MRI guided interventions
- Headed development of an automated tendon reflex stimulation/examination system with industry and clinical collaborators
- Conducted human subjects research involving mechanical and electrical stimulation, EMG, EEG, and TMS
- Initiated successful interdisciplinary funding proposals for multiple medical robotics projects, $280K CDMRP award for magnetic resonance elastography actuator development, seed grants for concept validation
- Authored 2 patents, 8 peer reviewed publications and presentations in a variety of venues
- 2 years of clinical immersion and collaboration training as an NSF-ARMS healthcare robotics fellow

Undergraduate Researcher August 2013 - July 2016
Bajcsy and Tomizuka Labs, UC Berkeley *Berkeley, CA*

- Developed assistive exoskeletons and pneumatic actuators
- Responsible for design, prototyping and characterization of novel pneumatic actuators (US Pat. 10,729,610)

Application Science Intern Summer, 2012 - 2015
Oxford Instruments *Santa Barbara, CA*

- Aided development and evaluation of a new method for mechanical characterization at the nanometer scale
- Presented findings in a variety of venues, including client reports and research publications

Patents | *MRI Robotics, Wearable Robotics*

- **W. Meinhold**, A.-P. Hu, J. Oshinski, J. Ueda, and D. Martinez. **Systems and Methods for Magnetic Resonance Imaging Guided Robotics**, Aug. 17 2021. US Patent Application 17/404,619
- **W. Meinhold**, E. Ozkaya, M. Kurt, and J. Ueda. **Method and system for mri-guided visual servoing**, Mar. 31 2021. US Patent Application 2021/025131
- R. P. Matthew, E. J. Mica, **W. Meinhold**, J. A. Loeza, R. Bajcsy, and M. Tomizuka. **Semi-passive control system and method for assistive orthoses**, Aug. 4 2020. US Patent 10,729,610

Patents and Publications

Selected Publications | *Neuromodulation, MRI Robotics, Telemedicine, AFM,*

- **W. Meinhold**, H. Nieves, and J. Ueda. **Prediction of Single Trial Somatosensory Evoked Potentials From Mechanical Stimulation Intensity** . In *International Conference on Rehabilitation Robotics*, pages 1–6. IEEE, 2022
- **W. Meinhold**, D. E. Martinez, J. N. Oshinski, A.-P. Hu, and J. Ueda. **A direct drive parallel plane piezoelectric needle positioning robot for MRI guided intraspinal injection**. *IEEE Transactions on Biomedical Engineering*, 68(3):807–814, 2021
- **W. Meinhold**, Y. Yamakawa, H. Honda, T. Mori, S.-i. Izumi, and J. Ueda. **A Smart Tendon Hammer System for Remote Neurological Examination**. *Frontiers in Robotics and AI*, 8:28, 2021
- M. Kocun, A. Labuda, **W. Meinhold**, I. Revenko, and R. Proksch. **Fast, high resolution, and wide modulus range nanomechanical mapping with bimodal tapping mode**. *ACS nano*, 11(10):10097–10105, 2017

Awards

2023 Society of Instrument and Control Engineers (SICE) Young Authors award, 2022 ASME Dynamic Systems and Control Division Rising Star award, 2016-2018 NSF-ARMS Fellow

Interests

Freedive spearfishing, equipment design and fabrication; Surfboard shaping and restoration; Commercial fishing, fabrication and maintenance of fishing gear, mechanical and electrical systems