Junyi Zhu - CV

Assistant Professor Electrical Engineering & Computer Science Department University of Michigan 1301 Beal Ave, Ann Arbor, MI 48109 zhujunyi@umich.edu, https://www.junyizhu.com, https://sixlab-eecs.com

Education

Massachusetts Institute of Technology, USA Ph.D. in Computer Science MIT EECS Department, MIT Computer Science and Artificial Intelligence Lab	2019 - 2024
Advisor: Professor Stefanie Mueller	
Massachusetts Institute of Technology, USA Master of Science in Computer Science MIT EECS Department, MIT Computer Science and Artificial Intelligence Lab Advisor: Professor Stefanie Mueller	2017 - 2019
University of Washington, USA Bachelor of Science in Electrical Engineering Department of Electrical & Computer Engineering Advisor: Professor Joshua R. Smith, Professor Shwetak N. Patel	2013 - 2017

Full Paper Publications

- [19] Hongrui Wu*, Feier Long*, Hongyu Mao, JaeYoung Moon, **Junyi Zhu**†, Yiyue Luo†.

 BandEI: A Flexible Electrical Impedance Sensing Bandage for Deep Muscles and Tendons.

 In *Proceedings of the 38th Annual ACM Symposium on User Interface Software and Tech.*(UIST '25). ACM. (†co-last authors)
- [18] Marwa AlAlawi, Regina Zheng, SooYeon Ahn, Katherine Arianna Yan, Ticha Sethapakdi, **Junyi Zhu***, Stefanie Mueller*. Meta-antenna: Mechanically Frequency Reconfigurable Metamaterial Antennas. In *Proceedings of the 38th Annual ACM Symposium on User Interface Software and Tech.* (UIST '25). ACM. (*co-last authors)
- [17] **Junyi Zhu**, Tianyu Xu, Jiayu Wang, Emily Guan, JaeYoung Moon, Stiven Morvan, D Shin, Andrea Colaço, Stefanie Mueller, Karan Ahuja, Yiyue Luo, Ishan Chatterjee. EI-Lite: Electrical Impedance Sensing for Micro-gesture Recognition and Pinch Force Estimation. In *Proceedings of the 38th Annual ACM Symposium on User Interface Software and Tech.* (UIST '25). ACM.
- [16] Devin Murphy, **Junyi Zhu**, Paul Pu Liang, Wojciech Matusik, and Yiyue Luo. WiReSens Toolkit: An Open-source Platform towards Accessible Wireless Tactile Sensing. In *arXiv* preprint arXiv:2412.00247 (2024).
- [15] Yunyi Zhu, Cedric Honnet, Yixiao Kang, **Junyi Zhu**, Angelina Zheng, Kyle Heinz, Grace Tang, Luca Musk, Michael Wessely, Stefanie Mueller. PortaChrome: A Portable Contact Light Source for Integrated Re-Programmable Multi-Color Textures. In *Proceedings of the 37th Annual ACM Symposium on User Interface Software and Tech.* (UIST '24). ACM.
- [14] **Junyi Zhu***, Young Joong Lee*, Yiyue Luo*, Tianyu Xu, Chao Liu, Daniela Rus, Stefanie Mueller and Wojciech Matusik. Liquids Identification and Manipulation via Digitally Fabricated Impedance Sensors. In *2024 IEEE International Conference on Robotics and Automation* (ICRA). IEEE.

- [13] Alexander Kyu*, Hongyu Mao*, **Junyi Zhu**, Mayank Goel and Karan Ahuja. EITPose: Wearable and Practical Electrical Impedance Tomography for Continuous Hand Pose Estimation. In *Proceedings of the 2024 CHI Conference on Human Factors in Computing Systems* (CHI '24). ACM.
- [12] Yiyue Luo, **Junyi Zhu**, Kui Wu, Cedric Honnet, Stefanie Mueller and Wojciech Matusik. MagKnitic: Machine-knitted Passive and Interactive Haptic Textiles with Integrated Binary Sensing. In *Proceedings of the 36th Annual ACM Symposium on User Interface Software and Technology* (UIST '23). ACM.
- [11] Donghyeon Ko, Yoonji Kim, **Junyi Zhu**, Michael Wessely, Stefanie Mueller. FlexBoard: A Flexible Breadboard for Interaction Prototyping on Curved and Deformable Surfaces. In *Proceedings of the 2023 CHI Conference on Human Factors in Computing Systems* (CHI '23). ACM.
- [10] Marwa AlAlawi, Noah Pacik-Nelson, **Junyi Zhu**, Ben Greenspan, Andrew Doan, Brandon M Wong, Benjamin Owen-Block, Shanti Mickens, Wilhelm Schoeman, Michael Wessely, Andreea Danielescu, Stefanie Mueller. MechSense: A Design and Fabrication Pipeline for Integrating Rotary Encoders into 3D Printed Mechanisms. In *Proceedings of the 2023 CHI Conference on Human Factors in Computing Systems* (CHI '23). ACM.
- [9] **Junyi Zhu**, Yuxuan Lei, Aashini Shah, Gila R. Schein, Hamid Ghaednia, Joseph H. Schwab, Casper Harteveld, Stefanie Mueller. MuscleRehab: Improving Unsupervised Physical Rehabilitation by Monitoring and Visualizing Muscle Engagement. In *Proceedings of the 35th Annual ACM Symposium on User Interface Software and Technology* (UIST '22). ACM.
- [8] Yoonji Kim, **Junyi Zhu**, Mihir Trivedi, Dishita G. Turakhia, Ngai Hang Wu, Donghyeon Ko, Michael Wessely, Stefanie Mueller. SensorViz: Visualizing Sensor Data Across Different Stages of Prototyping Interactive Objects. In *Proceedings of the 2022 ACM Designing Interactive Systems Conference* (DIS '22). ACM.
- [7] **Junyi Zhu**, Jackson Snowden, Joshua Verdejo, Emily Chen, Hamid Ghaednia, Joseph H. Schwab, Stefanie Mueller. EIT-kit: An Electrical Impedance Tomography Toolkit for Health and Motion Sensing. In *Proceedings of the 34th Annual ACM Symposium on User Interface Software and Technology* (UIST '21). ACM.
- [6] Junyi Zhu, Yunyi Zhu, Jiaming Cui, Leon Cheng, Jackson Snowden, Mark Chounlakone, Michael Wessely, Stefanie Mueller. MorphSensor: A 3D Electronic Design Tool for Reforming Sensor Modules. In *Proceedings of the 33rd Annual ACM Symposium on User In*terface Software and Technology (UIST '20). ACM.
- [5] **Junyi Zhu**, Lotta-Gili Blumberg, Yunyi Zhu, Martin Nisser, Ethan Carlson, Xin Wen, Kevin Shum, Jessica Quaye, Stefanie Mueller. CurveBoards: Integrating Breadboards into Physical Objects to Prototype Function in the Context of Form. In *Proceedings of the 2020 CHI Conference on Human Factors in Computing Systems* (CHI '20). ACM.
- [4] Martin Nisser, **Junyi Zhu**, Tianye Chen, Katarina Bulovic, Parinya Punpongsanon, Stefanie Mueller. Sequential Support: 3D Printing Dissolvable Support Material for Time-Dependent Mechanisms. In *Proceedings of the Thirteenth International Conference on Tangible, Embedded, and Embodied Interaction* (TEI '19). ACM.

- Edward Wang, **Junyi Zhu**, Mohit Jain, Tien-Jui Lee, Elliot Saba, Lama Nachman, Shwetak N. Patel. Seismo: Blood Pressure Monitoring using Built-in Smartphone Accelerometer and Camera. In *Proceedings of the 2018 CHI Conference on Human Factors in Computing Systems* (CHI '18). ACM. [BEST PAPER NOMINEE]
- [2] Edward Wang, William Li, **Junyi Zhu**, Rajneil Rana, Shwetak N. Patel. Noninvasive hemoglobin measurement using unmodified smartphone camera and white flash. In 2017 39th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC), Seogwipo, 2017.
- [1] Edward Wang, **Junyi Zhu**, William Li, Rajneil Rana, Shwetak Patel. HemaApp IR: noninvasive hemoglobin measurement using unmodified smartphone cameras and built-in LEDs. In *Proceedings of the 2017 ACM International Joint Conference on Pervasive and Ubiquitous Computing and Proceedings of the 2017 ACM International Symposium on Wearable Computers* (UbiComp '17). ACM.

Short Papers, Extended Abstracts & Demonstrations

- [12] Hongyu Mao, Alexander Kyu, **Junyi Zhu**, Mayank Goel, Karan Ahuja. Demo of EITPose: Wearable and Practical Electrical Impedance Tomography for Continuous Hand Pose Estimation. In *Adjunct Proceedings of the 37th Annual ACM Symposium on User Interface Software and Technology* (UIST'24 Adjunct). ACM.
- [11] Yunyi Zhu, Cedric Honnet, Yixiao Kang, **Junyi Zhu**, Angelina heng, Kyle Heinz, Grace Tang, Luca Musk, Michael Wessely, Stefanie Mueller. Demo of PortaChrome: A Portable Contact Light Source for Integrated Re-Programmable Multi-Color Textures. In *Adjunct Proceedings of the 37th Annual ACM Symposium on User Interface Software and Technology* (UIST'24 Adjunct). ACM.
- [10] Yunyi Zhu, Cedric Honnet, Yixiao Kang, **Junyi Zhu**, Angelina J. Zheng, Kyle Heinz, Grace Tang, Luca Musk, Michael Wessely and Stefanie Mueller. 2023. Demonstration of ChromoCloth: Re-Programmable Multi-Color Textures through Flexible and Portable Light Source. In *Adjunct Publication of the 36th Annual ACM Symposium on User Interface Software and Technology* (UIST '23 Adjunct). ACM.
- [9] Donghyeon Ko, Yoonji Kim, **Junyi Zhu**, Michael Wessely and Stefanie Mueller. 2023. Demonstration of FlexBoard: A Flexible Breadboard for Interaction Prototyping on Curved and Deformable Surfaces. In *Extended Abstracts of the 2023 CHI Conference on Human Factors in Computing Systems* (CHI EA'23). ACM
- [8] Xinyi Yang, Katarina Bulovic, Susanna Chen, Junyi Zhu and Stefanie Mueller. 2023.
 Azimuth Calculation and Telecommunication between VR Headset and Smartphones for Nearby Interaction. In Proceedings of the Seventeenth International Conference on Tangible, Embedded, and Embodied Interaction (TEI '23 Work in Progress). ACM.
- [7] **Junyi Zhu**. 2022. Design and Fabricate Personal Health Sensing Devices. In *Adjunct Publication of the 35th Annual ACM Symposium on User Interface Software and Technology* (UIST '22 Adjunct). ACM.
- [6] **Junyi Zhu**, Yuxuan Lei, Aashini Shah, Gila Schein, Hamid Ghaednia, Joseph H. Schwab, Casper Harteveld, Stefanie Mueller. Monitoring Muscle Engagement via Electrical Impedance Tomography for Unsupervised Physical Rehabilitation. In *Proceedings of the 35th*

- Annual ACM Symposium on User Interface Software and Technology (UIST '22). ACM.
- [5] **Junyi Zhu**, Liang He, Jun Nishida, Hamid Ghaednia, Hsin-Liu (Cindy) Kao, Jon E. Froehlich, Edward Wang, and Stefanie Mueller. 2022. SIG: Towards More Personal Health Sensing. In *CHI Conference on Human Factors in Computing Systems Extended Abstracts* (CHI '22 Extended Abstracts). ACM.
- [4] Cedric Honnet, Yunyi Zhu, **Junyi Zhu**, Michael Wessely and Stefanie Mueller. 2022. WearaFab: Digital Fabrication for Wearables Toolkits. In *CHI Conference on Human Factors in Computing Systems Extended Abstracts* (CHI '22 Extended Abstracts). ACM.
- [3] **Junyi Zhu**, Jackson Snowden, Joshua Verdejo, Emily Chen, Hamid Ghaednia, Joseph H. Schwab, and Stefanie Mueller. 2021. EIT-kit Demo: An Electrical Impedance Tomography Toolkit for Health and Motion Sensing. In *Adjunct Publication of the 34th Annual ACM Symposium on User Interface Software and Technology* (UIST '21). ACM.
- [2] **Junyi Zhu**, Yunyi Zhu, Jiaming Cui, Leon Cheng, Jackson Snowden, Mark Chounlakone, Michael Wessely and Stefanie Mueller. 2020. Demonstration of MorphSensor: A 3D Electronic Design Tool for Reforming Sensor Modules. In *Adjunct Publication of the 33rd Annual ACM Symposium on User Interface Software and Technology* (UIST '20). ACM.
- [1] **Junyi Zhu**, Lotta Blumberg, Yunyi Zhu, Martin Nisser, Ethan Carlson, Xin Wen, Kevin Shum, Jessica Quaye, Stefanie Mueller. CurveBoards Demo: Integrating Breadboards into Physical Objects to Prototype Function in the Context of Form. In *Extended Abstracts of the 2020 CHI Conference on Human Factors in Computing Systems* (CHI EA '20). ACM.

Patents

[1] **Junyi Zhu**, Stiven Morvan, Dongeek Shin, Andrea Colaco, Sambuddha Basu, Sean Bae. Full Hand Kinematic Reconstruction Using Electrical Impedance Tomography Wearable. U.S. Patent Application No. 63/387,443; No. 18/537,224; Pub. No. US 2024/0201792.

Conference Service

Organizing Committee ACM UIST, Video Recording Chair 2024 2023 - 2025 ACM CHI, Session Chair ACM UIST, Video Previews Chair 2022 - 2023 **Associate Chair** ACM CHI 2025 - 2026 ACM UIST 2025 **ACM IMWUT** 2025 ACM CHI Workshops 2023 ACM TEI 2023 ACM CHI Late Breaking Work 2021 Reviewer ACM CHI 2020 - 2025 2020 - 2025 ACM UIST 2020 - 2025 ACM UbiComp ACM TEI 2020 - 2024 ACM ISS 2020 Volunteering ACM CHI Student Volunteer 2020

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ACM CHI Program Committee Meeting, Subcommittee Chair Assistant

2019

Research Internships

Google AR Team, Google LLC Research Intern, Mountain View, CA Office Advisor: Dr. Andrea Colaco & Dr. D. Shin	2022 - 2023
UW Ubicomp Lab, University of Washington Research Assistant, Paul G. Allen School of Computer Science & Engineering Advisor: Professor Shwetak Patel	2016 - 2017
UW SEAL Lab, University of Washington Research Assistant, Department of Electrical & Computer Engineering Advisor: Professor Alexander V. Mamishev	2016
Exposure Sciences Group, University of Washington Research Assistant, School of Public Health Advisor: Professor Edmund Seto	2016
Work Experience	
Senosis Health, Seattle, USA	2016 - 2017

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Senosis Health, Seattle, USA	2016 - 2017
Software Engineer, supervisor: Mike Clarke	
Jiangsu SEUIC Technology Co., Ltd, China Software Engineer, supervisor: Prof. Chen Hu (Southeast University, China)	2015

Invited Talks

Forum on Future Interaction: Reimagining Human-AI Relationships, Yokohama Japan. Towards Regional Health and Medical Monitoring Systems that Adapt to Individual Variance in the Age of AI. Hosted by Prof. Shengdong Zhao, City University of Hong Kong.

University of Washington, Electrical and Computer Engineering Department. Research Seminar on Wearable Intelligence: Health Sensing, hosted by Prof. Yiyue Luo 2024

Zhejiang University, College of Computer Science and Technology. Personal Health and Medical Monitoring Systems that Adapt to Individual Variance, hosted by Prof. Guanyun Wang

MIT Digital Health and Wellness Seminar. Keynote Speaker, hosted by Prof. Rosalind Picard 2024

Carnegie Mellon University, School of Computer Science, Human Computer Interaction Institute. From Systemic to Regional: Personal Health and Medical Monitoring Systems that Adapt to Individual Variance, hosted by Prof. Alexandra Ion 2024

Cornell University, Human Centered Design Department. From Systemic to Regional: Personal Health and Medical Monitoring Systems that Adapt to Individual Variance, hosted by Prof. Gary Evans 2024

Emory University, Computer Science Department. From Systemic to Regional: Personal Health and Medical Monitoring Systems that Adapt to Individual Variance, hosted by Prof. Yolanda Rankin 2024

Harvard Medical School, The 10th Annual International Symposium on Regenerative Rehabilitation. Active Impedance Sensing for Muscle Engagement Monitoring, hosted by Prof. Fabrisia Ambrosio 2024

University of Michigan, Electrical Engineering and Computer Science Department. From Systemic to Regional: Personal Health and Medical Monitoring Systems that Adapt to Individual Variance, hosted by Prof. Robert Dick 2024

New York University, Computer Science and Engineering Department. From Systemic to Regional: Personal Health and Medical Monitoring Systems that Adapt to Individual Variance, hosted by Prof. Claudio Silva

University of Notre Dame, Computer Science and Engineering Department. Towards Personal Health and Medical Monitoring Systems, hosted by Prof. Walter Scheirer 2024

Zhejiang University, School of Software Technology. Towards Personal Health and Medical Monitoring *Network*, hosted by Prof. Mengru Xue University of California, Berkeley, Hybrid Ecologies Lab. Towards Personal Health and Medical Monitoring Network, hosted by Prof. Eric Paulos **Stanford University, SHAPE Lab.** Towards Personal Health and Medical Monitoring Network, hosted by Prof. Sean Follmer 2023 Tsinghua Youth Talent Development Seminar. Bridging Between Clinical and Daily Environment: Design and Fabricate Personal Health Sensing Devices. hosted by Department of Computer Science and Technology, Tsinghua University International Youth Festival on Design Futures, Smart & Digital Futures. Digital Healthcare: Future Personal Health Sensing Devices, hosted by Dr. Yuqi Liu, Tsinghua University 2022 Google LLC, AR Perception Team. Electrical Impedance Tomography: Introduction, Implementation, and Intuitions, hosted by Dr. D. Shin 2022 University of Illinois at Urbana-Champaign, Coordinated Science Laboratory. Building Personal Physical Rehabilitation Monitoring Devices, hosted by CSLSC 2022 University of Chicago, Human Computer Integration Lab. Towards More Personal Health Sensing Devices, hosted by Prof. Pedro Lopes 2021 MIT, MIT Nano Explorations. Integrating Object Form and Electronic Function in Rapid Prototyping and Personal Fabrication, hosted by Prof. Vladimir Bulović 2020 Harvard University, Graduate School of Design, hosted by Prof. Krzysztof Wodiczko 2018

Awards and Honors

Siebel Scholars, Thomas and Stacey Siebel Foundation, 2022 - 2023

Thomas Stockham Jr. Fellowship, MIT, 2021 - 2022

Frederick C. Hennie III Teaching Award, MIT EECS Department, 2021

Best Paper Nominee, ACM CHI 2018

Seneff-Zue Computer Science Fellowship Award, MIT, 2017 - 2018

Dean's List, University of Washington, 2013 – 2017

Selected Press

University of Michigan News. Q&A with new faculty member Junyi Zhu.	2025
MIT News. A portable light system that can digitize everyday objects.	2024
University of Michigan News. Welcome to our new faculty (2024-2025)	2024
MIT News. Toward more flexible and rapid prototyping of electronic devices.	2023
MIT News. 3D-printed revolving devices can sense how they are moving.	2023
Medical Design & Outsourcing. MIT researchers seek to 'see' inside the body during rehab.	2022
Hackster.io. MuscleRehab Provides an Inside Look at What Your Muscles Do During Physiotherapy and More.	2022
MIT News. MIT system "sees" the inner structure of the body during physical rehab.	2022
Healthcare IT News. MIT, MGH create VR system to advance physical therapy at home.	2022
Medical Design & Outsourcing. MIT researchers seek to 'see' inside the body during rehab.	2022
MIT News. Making health and motion sensing devices more personal.	2021

Yahoo News, MIT's toolkit lets anyone design their own muscle-sensing wearables.				2021		
Hackster.io. It's What's on the Inside That Counts.				2021		
Espressif Systems. ESP32-powered Electrical Impedance Tomography Toolkit by MIT.				2021		
MIT News. A hands-on	class respo	onds to Covid.				2021
Engadget, MIT's toolki	t lets anyon	e design their own m	uscle-sen	sing wearables.		2021
MIT News. Electronic	design tool	morphs interactive ob	jects.			2020
MIT News. Integrating	Electronics	onto Physical Protot	ypes.			2020
Hackster.io. Prototype	Like a Pro.					2020
	3D Printing Industry. MIT RESEARCHERS DEVELOP NOVEL 3D DESIGN SOFTWARE FOR BEDDED ELECTRONICS.				OR EM- 2020	
UW ECE Spotlight. ECE alum Junyi Zhu integrates electronics onto physical prototypes at MIT "CurveBoards".				with 2020		
ACM TechNews. 3D-p	rinted Curv	eBoards enable easie	r testing	of circuit design on pro-	ducts.	2020
Inverse. TIRED: BREA	DBOARD	S. WIRED: CURVE	BOARDS	S.		2020
GeekWire. Google buy	s Seattle he	ealth monitoring startu	ıp Senosi	s, bolstering digital hea	ılth push	2017
MIT Technology Review	ew. How to	make a smart phone	detect an	emia.		2016
Mentoring						
Master thesis						
 [7] Zhiyu Jia [6] Shufeng Yin [5] Ruowang Zhar [4] Gila R Schein [3] Yuxuan Lei [2] Joshua Verdejo [1] Lotta G. Bluml)				2025 - 2 2025 - 2 2023 - 2 2022 - 2 2021 - 2 2020 - 2 2018 - 2	2026 2024 2023 2022 2021
Research project stude	•	·UROPs. UROPs)			2010 2	2017
[20] Jiayu Wang	ints (Super	2023	[10]	Jiaming Cui	201	19-2020
[19] Masarah Ahme [18] Malinda Lu [17] Aashini Shah [16] Zipei Tan [15] Sloke Shrestha [14] Emily Chen [13] Gila R Schein [12] Jenny Chen [11] Jackson Snowo		2023 2023 2022 2021 2021 2021 2020 2020	[16] [9] [8] [7] [6] [5] [4] [3] [2] [1]	Mark Chounlakone Jessica Ayeley Quaye Ethan Levi Carlson Xin Wen Kevin Shum Leon Cheng Yunyi Zhu Katharina Bulovic Tianye Chen	201 201 201 201 201 201	19 19 19 19 19 19 19-2020 18-2020
Teaching						
Instructor / Co-Instructor						
[3] 498/598 [2] 373 [1] 6.810	, , , , , , , , , , , , , , , , , , ,					
Teaching Assistant						
[5] 6.810 Engineering Interactive Technologies, MIT Autumn Junyi Zhu – CV				n 2020 7		

[4]	6.810	Engineering Interactive Technologies, MIT	Autumn 2018
[3]	CSE/EE 474	Introduction to Embedded Systems, UW	Autumn 2016
[2]	CSE/EE 472	Introduction to Embedded Systems, UW	Summer 2016
[1]	CSE/EE 371	Design of Digital Circuits and Systems, UW	Spring 2016
Lecture	es		
6.4860	Medical Device	Design, Active Sensing Wearable Devices, MIT	Spring 2024
6.810	Engineering In	teractive Technologies, Health Sensing, MIT	Autumn 2020
6.810	Engineering In	teractive Technologies, Computer Vision Workshop, MIT	Autumn 2018

References

Stefanie Mueller

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Edward Jay Wang

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