Pei-Yao Hung

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Research Interest

Digital Health Interventions, Human-Computer Interaction,

Computer-Supported Cooperative Work, Ubiquitous Computing

Education

2012, 2022 **University of Michigan**
Ann Arbor, MI, USA PhD in Information Science (T.02)
MS in Human-Computer Interaction
Advisor: Mark S. Ackerman
Committee: Mark W. Newman, Atul Prakash, and Florian Schaub

2006, 2008 **National Taiwan University**
Taipei, Taiwan MS in Computer Science and Information Engineering (T.01)
BS in Computer Science and Information Engineering
Advisor: Hao-Hua Chu
Committee: Jane Yung-Jen Hsu, and Tei-Wei Kuo

Professional Experience

08/2022 – present **Institute for Social Research, University of Michigan, Software Developer**
Ann Arbor, MI, USA Designing, implementing, and testing software architecture to support mobile health solutions for delivering just-in-time adaptive interventions (JITAIs); developing and analyzing JITAI applications to identify critical components and best practices for ensuring system fidelity and data quality; leading software collaboration in a multidisciplinary team effort to scale technology-based scientific research through opensource initiatives. Project (s): JustIn, MiWaves. (C.05, J.06)

05/2021 – 01/2023 **The Wearables In Reducing Risk and Enhancing Daily Lifestyle Center (WIRED-L), University of Michigan, Software Developer**
Ann Arbor, MI, USA
Developed a mobile app, myBPmyLife, for a clinical trial to examine how goal setting and just-in-time intervention could affect choices of low sodium options for individuals with heart issues. Developed a web app, WalkToJoy, with SMS capability and Fitbit integration to investigate how sending people smile-inducing pictures when prompted to walk might affect people's attitudes toward walking in a positive manner and thus increase their daily step counts.

04/2022 – 01/2023 **Fred Hutchinson Cancer Center, Software Developer (Consultant)**
Ann Arbor, MI, USA
Designed and developed a web-based simulation tool for health officials to compare the effectiveness of vaccine allocation strategies, Covid19Vaxplorer. (J.05)

09/2017 – 08/2022 **Department of Epidemiology, School of Public Health, University of Michigan, Research Assistant and Developer**
Ann Arbor, MI, USA
Explored different design dimensions of lung cancer screening decision aid through participatory design with minority groups in Detroit and developing a multilingual online decision aid, ShouldIScreen.com. (J.02, C.03, J.04)

05/2021 – 08/2022 **Human Factors Group, University of Michigan Transportation Research Institute, Technical Development Lead**
Ann Arbor, MI, USA
Led the design and development effort to build a new platform to support collaborative storytelling with the aim of developing public knowledge and connecting educators, students, and practitioners in the area of Public Interest Technology: Braider.io.

09/2012 – 04/2022 **School of Information, University of Michigan, Research Assistant**
Ann Arbor, MI, USA
Explored the interaction between technology and social relationships and developing technological augmentation (e.g., digital traces analysis using Python and interactive mobile/web applications) to support people to conduct their everyday lives in the cyber and physical world. (J.01, J.03, C.02, C.04, B.01, B.02, W.03, W.04, WIP.01, WIP.02)

09/2011 – 06/2012 **School of Information, University of Michigan, Research Assistant**
Ann Arbor, MI, USA
Designed and developed features of RePlay, a desktop application to playback sensor traces to support context-aware system design and development. (C.01, W.02)

02/2011 – 08/2011 **School of Information, University of Michigan, Developer**
Ann Arbor, MI, USA
Revised and maintained an web-based test and questionnaire system to investigate students' awareness of security issues when using information technology.

09/2009 – 06/2010 **Institute of Information Science, Academia Sinica, Research Assistant**
Taipei, Taiwan
Designed a storytelling platform using Adobe Actionscript for elderly to revitalize psychological functions through the process of recalling memory of the past and present.

09/2008 – 06/2009 **Industrial Technology Research Institute of Taiwan, Research Intern**
Hsinchu, Taiwan
Investigated and utilized Wi-Fi signal patterns at crossroads to facilitate navigation system development.

07/2008 – 06/2012 **Consulting, Web Developer**
Taipei, Taiwan
Designed and implemented features of an on-line chamber customization platform, HaisonTech.

07/2007 – 08/2007 **Consulting, Game Programmer**
Taipei, Taiwan Designed and programmed the game flow and interaction of two installation games to teach children about information technology and health issues in a science exhibition held by Taiwan's National Science Council.

09/2006 – 06/2008 **National Taiwan University, Research Assistant**
Taipei, Taiwan Designed and developed CuttingGame, a computer game that facilitates in training, recording, and evaluating the visual-motor abilities of autistic children. (W.01, T.01)

Publications

Refereed Conference

C.05 Ghosh, Susobhan, Yongyi Guo, **Pei-Yao Hung**, Lara Coughlin, Erin Bonar, Inbal Nahum-Shani, Maureen Walton, Susan Murphy (2024). ReBandit: Random Effects Based Online RL Algorithm for Reducing Cannabis Use. In: *K. Larson (Ed.), Proceedings of the Thirty-Third International Joint Conference on Artificial Intelligence. IJCAI-24.* pp 7278–7286

C.04 **Hung, Pei-Yao**, Mark S. Ackerman (2022). Helping People to Control Their Everyday Data for Care: A Scenario-Based Study. In: *Lewy, H., Barkan, R. (eds) Pervasive Computing Technologies for Healthcare. PH 2021. Lecture Notes of the Institute for Computer Sciences, Social Informatics and Telecommunications Engineering*, vol 431. Springer, Cham.

C.03 **Hung, Pei-Yao**, Yan Kwan Lau, Mark S. Ackerman, Rafael Meza (2019). Designing a Web-based Decision Aid for Individuals to Consider Lung Cancer Screening. *13th EAI International Conference on Pervasive Computing Technologies for Healthcare (PervasiveHealth)*, Trento, Italy, May 20–23. pp 51–60

C.02 Büyüktür, Ayse G., Mark S. Ackerman, Mark W. Newman, **Pei-Yao Hung** (2017). Design Considerations for Semi-Automated Tracking: Self-Care Plans in Spinal Cord Injury. *11th EAI International Conference on Pervasive Computing Technologies for Healthcare (PervasiveHealth)*, Barcelona, Spain, May 23–26. pp 183–192

C.01 Chang, Yung-Ju, **Pei-Yao Hung**, Mark W. Newman (2012). TraceViz: 'Brushing' for Location Based Services. *ACM International Conference on Human-Computer Interaction with Mobile Devices and Services (MobileHCI)*, San Francisco, CA, USA, September 21–24. pp 345–348

Journal Articles

J.06 Coughlin, Lara N., Maya Campbell, Tiffany Wheeler, Chavez Rodriguez, Autumn Rae Florimbio, Susobhan Ghosh, Yongyi Guo, **Pei-Yao Hung**, Mark W. Newman, Huijie Pan, Kelly W. Zhang, Lauren Zimmermann, Erin E. Bonar, Maureen Walton, Susan Murphy, Inbal Nahum-Shani (2024). A mobile health intervention for emerging adults with regular cannabis use: A micro-randomized pilot trial design protocol. *Contemporary Clinical Trials*.

J.05 Trejo, Imelda, **Pei-Yao Hung**, Laura Matrajt (2024). Covid19Vaxplorer: a free, online, user-friendly COVID-19 Vaccine Allocation Comparison Tool. *PLOS Glob Public Health* 4(1): e0002136.

J.04 Webster, Marguerite, Julia Whealan, Randi M Williams, Ellie Eyestone, Ariel Le, Jack Childs, Jen-Yuan Kao, Maria Martin, Sara Wolfe, Felice Yang, **Pei-Yao Hung**, Yan Kwan Lau, George Luta, Martin Tammemagi, Rafael Meza, Kathryn L Taylor (2023). The tobacco quitline setting as a teachable moment: The Educating Quitline Users About Lung (EQUAL) cancer screening randomized trial. *Translational Behavioral Medicine*.

J.03 **Hung, Pei-Yao**, Drew Canada, Michelle A. Meade, and Mark S. Ackerman (2022). Data Checkers: A Grid-Based UI for Managing Patient-Generated Data Sharing to Support Collaborative Self-Care. *Frontiers in Computer Science*, Volume 3.

J.02 Lau, Yan Kwan, Harihar Bhattarai, Tanner J. Caverly, **Pei-Yao Hung**, Evelyn Jimenez-Mendoza, Minal R. Patel, Michele L. Coté, Douglas A. Arenberg, Rafael Meza (2021). Lung Cancer Screening Knowledge, Perceptions, and Decision Making Among African Americans in Detroit, Michigan. *American Journal of Preventive Medicine*, Volume 60, Issue 1, January 2021, Pages e1-e8.

J.01 Büyüktür, Ayse G., **Pei-Yao Hung**, Mark S. Ackerman, Mark W. Newman (2018). Supporting Collaboratively Constructed Independence: A Study of Spinal Cord Injury. *Journal Proceedings of the ACM on Human-Computer Interaction - CSCW*, Volume 2 Issue CSCW, November 2018, Article No. 26.

Book Chapter

B.02 Ackerman, Mark S., Ayse G. Büyüktür, **Pei-Yao Hung**, Michelle Meade, Mark W. Newman (2017). Sociotechnical Design for the Care of People with Spinal Cord Injuries, in *Designing Healthcare That Works: A Sociotechnical Approach*, Ackerman, Mark, A., Michael Prilla, Christian Stary, Thomas Herrmann, Sean Goggins (eds.), Academic Press, 2017.

B.01 Merrit, David, **Pei-Yao Hung**, Mark S. Ackerman (2016). Expertise Finding: A Socio-Technical Design Space Analysis, in *Expertise, Communication, and Organizing*, Treem, Jeffrey and Paul Leonardi (eds.), Oxford University Press, 2016.

Refereed Workshop & Doctoral Consortium

W.04 **Hung, Pei-Yao**, Mark S. Ackerman (2019). Supporting Care Teams with Participatory Governance over Data Sharing. Who Cares? Exploring the Concept of Care Networks for Designing Healthcare Technologies Workshop, *The 17th European Conference on Computer-Supported Cooperative Work (ECSCW)*, June 8, Salzburg, Austria.

W.03 Kaziunas, Elizabeth, **Pei-Yao Hung**, Mark S. Ackerman (2014). FIT2: Information Translations for Health Practices. International Workshop on Collaboration and Coordination in the Context of Informal Care (CCCiC), *ACM Conference on Supporting Groupwork (GROUP)*, November 9, Sanibel Island, FL, USA.

W.02 Chang, Yung-Ju, Mark W. Newman, **Pei-Yao Hung**, Manchul Han (2013). Integrating Capture & Playback into Context-Aware Systems Development. International Symposium of Chinese (ChineseCHI), *ACM Conference on Human Factors in Computing Systems (CHI)*, April 28, Paris, France.

W.01 **Hung, Pei-Yao**, Jin-Ling Lo, Hsin-Yen Wang, Hao-Hua Chu, Ya-Lin Hsieh (2009). CuttingGame: A Computer Game to Assess & Train the Visual-motor Integration Ability for Preschool Children with Autism. Interactive Creative Play with Disabled Children Workshop, *ACM SIGCHI Interaction Design and Children (IDC)*, June 3, Como, Italy.

Work In Progress

WIP.02 Merrit, David, Mark W. Newman, **Pei-Yao Hung**, Mark S. Ackerman, Erica Ackerman (2015) Using Expertise for Crowd-sourcing. *AAAI Conference on Human Computation and Crowdsourcing (HCOMP)*, San Diego, USA, November 8–11.

WIP.01 **Hung, Pei-Yao**, Mark S. Ackerman (2015) Discount Expertise Metrics for Augmenting Community Interaction. *ACM International Conference on Communities and Technologies (C&T)*, Limerick, Ireland, June 27–30.

Thesis and Dissertation

T.02 **Hung, Pei-Yao** (2022). Designing System Support for Sharing Everyday Data for Chronic Care. *UMich PhD Dissertation*, Ann Arbor, Michigan, USA.

T.01 **Hung, Pei-Yao** (2008). A Computer Cutting Game to Train Hand Function for Children. *NTU MS Thesis*, Taipei, Taiwan, August.

Software Invention

Should I Screen **https://shouldiscreen.com/**
A multilingual web-based decision aid to help patients make life-critical decisions on getting screened for lung cancer (11K weekly visitors worldwide), featured by many health systems/associations nationwide in the US, including Michigan Medicine, Penn Medicine, Colorado Cancer Coalition, Fred Hutch Cancer Center, Yale Medicine, and American College of Radiology.

Covid19Vaxplorer **https://covid19vaxplorer.fredhutch.org/**
A free, user-friendly web-based simulation tool for health officials to compare the effectiveness of COVID-19 vaccine allocation strategies in 183 countries/states/regions (covering 97.2% of the global population).

Braid **https://braider.io/**
An open-access tool to facilitate individual and group storytelling and research with the aim of developing and scaling public knowledge. Currently, there are 13 groups, including faculty and students from 5 universities (Rust College, Stillman, Indiana U., UMich, OSU) using Braid to support teaching and learning. (UMich Invention: 2024-192)

Grants

10/2022 – 04/2024 **New America/Ford Foundation**
$140,000 A Knowledge Network for Underrepresented Public Interest Technology (PIT) Entrepreneurs, Research Associate

11/2021 – 11/2022 **Michigan Institute for Data Science (Google Cloud Platform Credits)**
$10,000 Public Interest Technology – Knowledge Network, Research Assistant

08/2019 **University of Michigan Rackham Graduate School**
$1050 Travel Grant, Graduate Student Research Assistant

01/2017 **University of Michigan Rackham Graduate School**
$1750 Interdisciplinary Workshop Grant for Designers of Interactive, Intelligent, Internet of Things (DoIIIT), Student Member

07/2015 **University of Michigan Rackham Graduate School**
$6000 Interdisciplinary Workshop Grant for Michigan Interactive and Social Computing (MISC), Student Coordinator

06/2015 **University of Michigan School of Information**
$700 Travel Grant, Graduate Student Research Assistant

06/2015 **University of Michigan Rackham Graduate School**
$1050 Travel Grant, Graduate Student Research Assistant

07/2014 **University of Michigan Rackham Graduate School**
$6000 Interdisciplinary Workshop Grant for Michigan Interactive and Social Computing (MISC), Student Coordinator

08/2013 **University of Michigan Rackham Graduate School**
$1400 Graduate Student Research Grant, Graduate Student Research Assistant

Awards

Winter 2016 **Google Internet of Things (IoT) Technology Research Award**
Awarded mobile and IoT devices to support research on the design of IoT systems for supporting people with spinal cord injuries.

Fall 2010 **University of Michigan Mobile Apps Challenge Runner-Up**
Designed a mobile application that manages personal emotions, with the goal of helping users reflect on their emotions and be aware of others' emotions. In collaboration with Ying-Yu Chen.

Winter 2010 **University of Michigan iDesign Competition Second Place**
Designed visualizations to create a new browsing interface for University Library's music collection. In collaboration with Gin L Chieng, Pei-Chih (Bell) Shih, Sylvia Szu-Hsuan Lai, and Yi-Ying Lin.

Presentations

03/19/2025 **Michigan Institute for Data & AI in Society - 2025 AI in Science and Engineering Symposium**
Ann Arbor, MI, USA U-M Campus Resources & Faculty Implementation Pitches - JustIn Software Framework (from Data Science for Dynamic Intervention Decision-Making Center)

02/12/2025 **The Comprehensive Program for Adaptive Interventions Training in Education (CATIE)**
Ann Arbor, MI, USA [Poster] JustIn: Software framework for effective and implementable just-in-time adaptive interventions. *Honorable Mention for Best Presentation.*

06/03/2024 **Society for Ambulatory Assessment Annual Conference**
Ann Arbor, MI, USA JustIn: Software framework for constructing effective and implementable just-in-time, adaptive interventions and assessments

02/21/2024 **The Comprehensive Program for Adaptive Interventions Training in Education (CATIE)**
Ann Arbor, MI, USA [Poster] JustIn: Software framework for effective and implementable just-in-time adaptive interventions

12/06/2021 **International Conference on Pervasive Computing Technologies for Healthcare (PervasiveHealth)**
Tel Aviv, Israel (Remote) Helping People to Control Their Everyday Data for Care: A Scenario-Based Study

11/18/2021 **Public Interest Technology Knowledge Network Kick-Off**
Ann Arbor, MI, USA Mainstreaming the embodied knowledge and lived experiences of BIPOC PIT Practitioners

01/30/2019 **Privacy@Michigan - Celebrating International Data Privacy Day**
Ann Arbor, MI, USA [Poster] Empowering Patients to Share Patient-Generated Data through a Grid-Based User Interface

05/21/2019 **International Conference on Pervasive Computing Technologies for Healthcare (PervasiveHealth)**
Trento, Italy Designing a Web-based Decision Aid for Individuals to Consider Lung Cancer Screening

01/30/2018 **Privacy@Michigan - Celebrating International Data Privacy Day**
Ann Arbor, MI, USA [Poster] Enable Control and Monitoring of IoT Data Sharing to Support Chronic Care

10/19/2017 **State of Science conference - Facilitating Health Self-Management and Independence among adolescents and Young Adults with Disabilities: The Development, Efficacy, Integration, & Sustainability of Mobile Technology to Support the Transition Process**
Arlington, VA, USA [Showcase] Sensible Care: using Internet of Things (IoT) data to support collaborative care with sensing and mobile technology

09/02/2017 **Michigan Taiwanese Student Association (MTSA) Orientation**
Ann Arbor, Michigan, USA English Learning Resources at the University of Michigan

08/05/2017 **Sharing Salon at National Tsing Hua University**
Hsinchu, Taiwan Reflection on Multidisciplinary Research Experience

07/16/2015 **National Tsing Hua University Institute of Information Systems and Applications**
Hsinchu, Taiwan Discount Expertise Metrics for Augmenting Community Interaction

06/26/2015 **International Conference on Communities and Technologies (C&T)**
Limerick, Ireland Discount Expertise Metrics for Augmenting Community Interaction

06/06/2012 **National Chengchi University Department of Computer Science**
Taipei, Taiwan HCI Program and Research at the University of Michigan School of Information

05/13/2011 **National Taiwan University Department of Computer Science & Information Engineering, Intelligent Agents Lab**
Taipei, Taiwan Contextual Design Process Experience Sharing

06/05/2009 **Interaction Design and Children Conference (IDC)**
Como, Italy [Workshop] CuttingGame: A Computer Game to Assess & Train the Visual-motor Integration Ability for Preschool Children with Autism

Academic and Professional Society

Association for Computing Machinery, United States Research Software Engineer Association

Training & Certification

06/01/2017 **Certificate of Completion, Preparing Future Faculty Seminar**
University of Michigan

Service

Program Committee

Taiwan Computer-Human Interaction Conference (Tai-CHI)

Poster Chair, Taiwan Computer-Human Interaction Conference (Tai-CHI)

Peer Reviewing

PLOS ONE

ACM Conference on Computer-Supported Cooperative Work and Social Computing (CSCW)

ACM SIGCHI Conference on Designing Interactive Systems (DIS)

ACM Conference on Human Factors in Computing Systems (CHI)

ACM International Conference on Human-Computer Interaction with Mobile Devices and Services (MobileHCI)

Taiwan Computer-Human Interaction Conference (Tai-CHI)

Other

ACM Conference on Computer-Supported Cooperative Work and Social Computing (CSCW) student volunteer

Michigan Interactive and Social Computing (MISC) student organizer

University of Michigan School of Information Doctoral Executive Committee (DEC) officer

Teaching

01/2021 – 04/2021
University of Michigan

Graduate Student Instructor – Programs, Information and People
Develop education content for e-textbook to introduce Python programming knowledge, lead two weekly discussion sections with 25+ students to review fundamental programming concepts, and host office hours to provide one-on-one tutoring.

09/2020 – 12/2020
University of Michigan

Graduate Student Instructor – User Interface Development
Assist with teaching a remote undergraduate Computer Science course with 360+ students across different time zones, serve as the bridge between instructional aides and faculty instructors to ensure the smooth operation of the class, design homework for students to apply User Interface Development concepts using HTML/CSS/Javascript/Vue.js, manage study groups to facilitate peer learning among students with different skill sets, record demonstration videos to guide students on homework and materials, and answer questions on Piazza (crowd-sourcing Q&A system) to encourage continuous discussion outside of lecture.

01/2020 – 04/2020 **Graduate Student Instructor – UX Field Research**
University of Michigan Gave a guest lecture to examine a case study applying participatory design, held office hours weekly to provide need-based assistance, and provided feedback on students' UX research plans for applying different methods (e.g., interview, survey, participatory design) to sharpen their research planning skills.

09/2019 – 12/2019 **Graduate Student Instructor – Programming I (Python)**
University of Michigan Led 2 weekly lab sessions (20+ master students per session) to examine important programming concepts and provided one on one instructions, held office hours weekly to provide need-based assistance, answered questions during in-lecture learning activities, used online platform Piazza to facilitate continuous student engagement, constructed a wiki to provide structural learning guidance, held learning clinic to provide group-based discussion and feedback about learning strategies, and participated in a panel on problem-solving to share and discuss good programming practices.

01/2015 – 04/2015 **Graduate Student Instructor – Introduction to Information Studies**
University of Michigan Led 3 weekly discussion session (above 15 students per session) to examine course topics, taught a 1.5 hours lecture in Human-Computer Interaction (HCI) with 240 undergraduate students, designed 2 weekly lesson plans as the guidance for other instructors, and graded response papers and visualization projects to improve students' writing and visual presentations.

09/2014 – 12/2014 **Graduate Student Instructor – Networked computing: Storage, Communication and Processing (Python)**
University of Michigan Developed and led 3 weekly lab sessions (above 15 master students per session) to examine important programming and computer concepts using Python and provided one on one instructions, graded programming assignments to provide feedback about the design and implementation of homework solutions, and held office hours weekly to answer additional questions.

08/11/201 **Instructor – Workshop on How to Organize and Do a Presentation**
National Taiwan University Presented a lecture on organizing a presentation in a problem-solution format, and led a workshop to guide students to practice an impromptu presentation.

July 2009 **Instructor – Adobe Flex/Flash Prototyping Crash Course**
National Taiwan University Designed lecture, prepared sample code, delivered a 2 hours training course to introduce the fundamental concepts required for prototyping in Adobe Flex/Flash for the Intelligent Agent lab as part of its orientation.

January 2009 **Instructor – Object Oriented Programming using C#**
National Taiwan University Developed syllabus, wrote lectures, created projects, presented, and graded,successfully facilitated understanding of programming, resulting in 5 students with no technology background developing a simple calculator with a graphic user interface in ten days.

Fall 2006 **Teaching Assistant – Database Systems**
National Taiwan University Graded assignments and held weekly office hours to answer students' questions.

Students Supervised and Mentored

Undergraduate and Master's

07/2023 – Present
University of Michigan
A graduate student working as a software developer
Supervise software development and provide feedback for creating Just-In-Time Adaptive Interventions (JITAIs).

09/2024 – 12/2024
University of Michigan (Remote)
A graduate student seeking to apply to PhD programs in Human-Computer Interaction
Discussed the process and experience of applying for and completing PhD training in the US, including the timeline, the application materials, the training, and job seeking.

11/2022 – 05/2023
University of Michigan
A graduate student working as a UX designer
Supervise UX design and provide feedback for MiWaves, a mobile app to support emerging adults with substance use concerns through messaging.

09/2021 – 08/2022
University of Michigan
An undergraduate student conducting human-centered research
Provided instructions and feedback on human-centered design research process to continue the development of a lung cancer screening decision aid, ShouldIScreen.com.

05/2021 – 08/2021
University of Michigan
A graduate student working as a UX researcher and designer
Provided feedback and guidance on UX research instrument design and data analysis to understand and design a storytelling platform for educators, students, and practitioners in the field of Public Interest Technology (PIT).

07/2017 – 08/2017
University of Michigan
An undergraduate student with disability who uses his experience to design mobile application to support self-care at home
Introduced the concept of user-centered design, designed readings and homework, provided feedback on deliverables, facilitated brainstorming

09/2015 – 05/2016
University of Michigan
A team with 5 master students who became CHI 2016 Student Design Competition Finalist
Guided analysis of interview data, provided critique of findings and design recommendations, suggested writing revisions and polished presentation flow.
See "Dot-it: Managing Nausea and Vomiting for A Peaceful Pregnancy with Personal Pattern Exploration" in ACM Digital Library.

Summer 2009
National Taiwan University
A team with 6 undergrad students who received the Best Experience Award at the 1st annual OpenHCI workshop
Mentored the learning and practicing of design thinking methods to identify problems and brainstorm a solution to streamline the dining experience in a university cafeteria.