Yuecheng Peng

PhD Student, University of Washington | Human-Computer Interaction, Human–AI Interaction, Personal Fabrication

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Education

University of Washington Seattle, WA
Ph.D. in Human Centered Design & Engineering. Advisor: Nadya Peek *Sept 2025 – 2030 (expected)*

University of Washington Seattle, WA
Master of Science in Technology Innovation (Computer Science). GPA [3.98/4.0] *Sept 2023 - Mar 2025*

Zhejiang University Hangzhou, China
Bachelor of Engineering, Industrial Design. GPA [3.98/4.0] Rank [1/45] *Sept 2019 - Jun 2023*

Research Experience

AI-supported creative workflow **University of Washington**
Lead Researcher | Advisor: Nadya Peek *Oct 2025 - ongoing*

- Built a multi-agent AI application to automate end-to-end 3D printing workflows using Python (Flask) and React.
- Integrated computer vision (OpenCV, YOLO, SAM3, OpenAI vision models) into the 3D printing workflow to detect print defects in real time and leverage print-plate context for creative tasks.

AI-assisted Platform for Connecting HCI Research with Makers **Tsinghua University**
Lead Researcher, team of 4 | Advisor: Haipeng Mi, Liang He *Mar - Sept 2025*

- Conducted 21 semi-structured interviews and thematic analysis to reveal barriers and design opportunities for connecting HCI personal fabrication research with the maker community.
- Built a full-stack web platform using Python (Django) and React.js to support exploration of HCI fabrication research.
- Implemented prompt engineering strategies, such as few-shot learning, to extract customized metadata fields from research papers, and evaluated human alignment by collecting author feedback on accuracy, clarity, and sufficiency.
- Led 5 user evaluation sessions of the research prototype through task-based exploration, semi-structured interviews, and questionnaires to assess usability and perceived usefulness.

Fabrication for Accessibility **University of Washington**
Research Assistant | Advisor: Jennifer Mankoff *Feb 2024 - Mar 2025*

- Developed a Three.js 3D printing toolpath planner for pressure sensors and ergonomic improvement of daily objects.
- Designed and fabricated physical prototypes of mobility aid adaptations to support in-person co-design workshops, and co-facilitated sessions gathering qualitative feedback on usability and design preferences.

Biodegradable Hydrogel Sensor & Actuator Fabrication **University of California, Berkeley**
Lead Researcher, team of 6 | Advisor: Lining Yao *Apr - Sept 2024*

- Engineered a low-cost ($0.0256/m) tubular hydrogel fabrication pipeline for biodegradable sensors and actuators.
- Prototyped interactive wearables, edible shape-changing interfaces, and soft robotic grippers.

Functional Textiles Fabrication **Zhejiang University**
Lead Researcher, team of 8 | Advisor: Guanyun Wang *Sept 2022 - Jan 2024*

- Developed a low-cost ($4.7/m^2) fabrication pipeline for washable (600+ min laundry endurance) functional textiles.
- Built a full-stack application using Node.js and D3.js to visualize real-time wearable sensor data for health monitoring.
- Led a mixed-methods user study with 8 participants, evaluating the fabrication pipeline through hands-on design tasks, qualitative interviews, and questionnaires to validate usability and accessibility.

Knowledge Graph Tool for Sustainability Education **Zhejiang University**
Research Assistant | Advisor: Lingyun Sun, Xuanhui Liu *Oct 2021 - Apr 2022*

- Developed a full-stack Flask–Neo4j–D3.js platform visualizing sustainability knowledge graphs for interactive learning.
- Evaluated the platform via user studies showing improved application of sustainability concepts to real-world problems.

Publications

[1] **Fab2Make: Exploring Challenges and Opportunities in Connecting HCI Personal Fabrication Research with Makers**

Yuecheng Peng, Yutong Liu, Liang He, Haipeng Mi

In preparation for UIST '26

[2] **SensiPrint: 3D-Printed Soft Foams for Physical Augmentation and Sensing**

Jerry Cao, **Yuecheng Peng**, Hongrui Wu, Yuxuan Miao, Sanjana Satagopan, Runxin Shi, Brier Hehmeyer, Brett Emery, Jeffrey Ian Lipton, Jennifer Mankoff, Shwetak Patel

In preparation for UIST '26

[3] **Material-Driven Design and Fabrication of Devices for Direct Ecological Interventions: Practices, Challenges, and Opportunities**

Yaning Li, Yuexi Chen, Bob Tianqi Wei, Ziqian Yu, Chengjun Li, Yue Yang, Tingyu Cheng, Eldy S. Lazaro Vasquez, Di Wu, Zeyu Yan, Tianyu Yu, **Yuecheng Peng**, Dinesh K Patel, Huaishu Peng, Nivedita Arora, Aditi Maheshwari, Josiah Hester, Jean-Baptiste Labrune, Vikram Iyer, Guanyun Wang, Meng Li, Andreea Danielescu, Hiroshi Ishii, Fiona Bell, Pedro Lopes, Lining Yao, Qiuyu Lu

In preparation for UIST '26

[4] **BioTube: Designing and Fabricating Biodegradable Hollow Tubular Devices Through Progressive Crosslinking Alginate**

Yuecheng Peng*, Mako Miyatake*, Tyler L Peng, Qiuyu Lu, Yue Yang, Lining Yao (* equal contribution)

CHI '25 | https://dl.acm.org/doi/10.1145/3706598.3714165

[5] **"A Tool for Freedom": Co-Designing Mobility Aid Improvements Using Personal Fabrication and Physical Interface Modules**

Jerry Cao, Krish Jain, Julie Zhang, **Yuecheng Peng**, Shwetak Patel, Jennifer Mankoff

*CHI '25, **Best Paper Honorable Mention** (Top 5%) | https://dl.acm.org/doi/10.1145/3706598.3713366*

[6] **What's in a cable? Abstracting Knitting Design Elements with Blended Raster/Vector Primitives**

Hannah Twigg-Smith, **Yuecheng Peng**, Emily Whiting, Nadya Peek

UIST '24 | https://dl.acm.org/doi/10.1145/3654777.3676351

[7] **IntelliTex: Fabricating Low-cost and Washable Functional Textiles using A Double-coating Process**

Yuecheng Peng, Danchang Yan, Haotian Chen, Yue Yang, Ye Tao, Weitao Song, Lingyun Sun, Guanyun Wang

*CHI '24, **Best Paper Honorable Mention** (Top 5%) | https://dl.acm.org/doi/10.1145/3613904.3642759*

Awards

Best Paper Honorable Mention, CHI (Top 5%)	*2024, 2025*
Honorable Mention Award, Design Intelligence Award (for IntelliTex)	*2024*
Outstanding Undergraduate Thesis Project, Zhejiang University	*2023*
Excellent Academic Model, Zhejiang University	*2020, 2021, 2022, 2023*
First Prize (Top 14%), National Olympiad in Informatics in Provinces (C++)	*2015*

Service

Mentor, University of Washington's Global Innovation Exchange (GIX)	*2025 - present*
Conference Reviewer, CHI	*2024, 2025, 2026*
Volunteer organizer, Ecological HCI: Reflection and Future, Special Interest Group, CHI	*2024*
Volunteer, The 5th China College Students' "Internet Plus" Innovation and Entrepreneurship Competition	*2019*