

# Hsuanling(Hannah) Lee

**Research Assistant, Department of Computer Science, University of Texas at Dallas**

Human-computer Interaction (HCI); Digital Fabrication; Wearable Technologies

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## Education

**Purdue University**, Elmore Family School of Electrical and Computer Engineering  
B.S. in Computer Engineering

West Lafayette, IN, USA  
Aug. 2018-Dec. 2023

## Research Experience

**Visiting Researcher**, advised by Prof. Koya Narumi

May. 2025-Sep. 2025

Keio University, Department of Information and Computer Science, Yokohoma, Japan

- Developed a method embedding yarn-level infrared (IR) markers into woven textiles to support data encoding and real-time fabric deformation tracking.
- Initiated an industry collaboration with a 3-million-grade Jacquard weaving mill and conducted production-scale tests to evaluate the method's scalability, verifying pattern fidelity, IR contrast, and weaving robustness across manufacturing conditions
- First-authored manuscript in preparation.
- Co-organized the **Computational Tailor-Making workshop at UIST 2025**, including website management and a hands-on weaving tutorial using the jacquard loom fabrication.

**Research Associate**, advised by Prof. Liang He

Aug. 2022-Apr. 2025

Purdue University, Department of Computer Graphics Technology, West Lafayette, IN, USA

- Managed the lab's digital fabrication infrastructure, including 3D printing, laser cutting, electronics assembly, and rapid prototyping.
- Mentored undergraduate students on fabrication techniques, hardware debugging, and project execution.

### 3D Magnetophoretic Display

- Developed computational design tool for **[P3]**: implemented mesh retopology, voxelization, voxel chamber generation, and injection-path slicing for synchronized extrusion-magnetic-fluid workflows.
- Co-presented and demoed **[P3]** at UIST 2023.

### 3D-printable Shaping-changing Devices with Integrated Sensing

- Developed 3D-printable shape-changing devices with integrated inductive sensing using elastic silicone resin fabricated on a stereolithography (SLA) 3D printer.
- Introduced the helix-and-lattice method that enables post-print insertion of a Nitinol shape-memory alloy spring for dual-mode inductive deformation sensing and thermally driven actuation through Joule heating.
- Co-developed a computational design tool with FEA simulation and a sensing authoring tool with machine-learning classifiers to interpret inductive signal change.
- Works concluded in three first-authored publications including a full paper **[P2]** and two ACM posters **[E2, E3]**.

### AI-assisted Tangible Do-It-Yourself Toolkit for People with Visual Impairments

- Designed the tangible hardware system for an AI-assisted DIY-AT toolkit for people with visual impairments.
- Built sensing and feedback modules (including enclosure, electronics, and PCBs) and implemented the embedded firmware.
- Contributed to the AI-assisted app workflow, user study design, data collection, and analysis, leading to **[P1]** (in review).

**Undergraduate Student Researcher**, advised by Prof. Yung-Hsiang Lu

Sep. 2018-Dec. 2018

Purdue University, Elmore Family School of Electrical and Computer Engineering, West Lafayette, IN, USA

- Researched a backpack-mounted camera system for collecting forest inventory data, focusing on data acquisition methods and field-deployable sensing workflows.

## Industry Experience

**Research and Development Software Engineer Intern**

May. 2021-Feb. 2022

Tesla Gigafactory 3, Shanghai, China


- Co-developed a stamping-cushion preload monitoring system, contributing to C# upper-computer software and a strain-sensing PCB.
- Proposed and prototyped an OpenCV and ML based liftgate recognition pipeline for automated process.
- Built large-scale public-comments data visualization tools and developed a Python scraper to structure community feedback.
- Created verification and validation tools for multiple R&D teams using Catia modeling and rapid prototyping with FDM 3D printing.

## Peer-Reviewed Publications

### Selected Conference and Invited Presentations

- [P1] 2025 Not Seeing the Whole Picture: Challenges and Opportunities in Using AI for Co-Making Physical DIY-AT for People with Visual Impairments.  
**Hsuanling Lee\***, Ben Kosa\*, Jasmine Li, Sanbrita Mondal, Yuhang Zhao, and Liang He. *Paper Under Review*.  
In Proceedings of the 2026 CHI Conference on Human Factors in Computing Systems (CHI '26).
- [P2] 2025 FluxLab: Creating 3D Printable Shape-Changing Devices with Integrated Deformation Sensing.  
**Hsuanling Lee**, Jiakun Yu, Shurui Zheng, Te-Yen Wu, and Liang He. *To appear at TEI' 26*.  
In Proceedings of the 20th International Conference on Tangible, Embedded, and Embodied Interaction (TEI '26).
- [P3] 2023 3D Printing Magnetophoretic Display.  
Zeyu Yan, **Hsuanling Lee**, Liang He, and Huaishu Peng.  
In Proceedings of the 36th Annual ACM Symposium on User Interface Software and Technology (UIST '23).  
**3DPC Pioneer of the Decade Finalist**

### Extended Abstracts/Poster & Workshop Papers

- [E1] 2025 Computational Tailor-Making for Personalized, Shape-changing, and Sustainable Fabrics.  
Koya Narumi, Yuichi Hirose, **Hsuanling Lee**, Maria Larsson, Liang He, Mackenzie Leake, Jack Forman, Behnaz Farahi, Lining Yao, and Takeo Igarashi.  
In Adjunct Proceedings of the 38th Annual ACM Symposium on User Interface Software and Technology (UIST Adjunct '25)
- [E2] 2024 Fluxable: A Tool for Making 3D Printable Sensors and Actuators.  
 **Hsuanling Lee**, Yujie Shan, Huachao Mao, and Liang He.  
In Adjunct Proceedings of the 37th Annual ACM Symposium on User Interface Software and Technology (UIST Adjunct '24).  
**Best Poster Award [Top 1%]**
- [E2] 2024 3D Printing Shape-Changing Devices with Inductive Sensing.  
**Hsuanling Lee** and Liang He.  
In ACM SIGGRAPH 2024 Posters (SIGGRAPH '24).

## Honors and Awards

- 2024 UIST 2024 Jury Best Poster Award  
2018-2023 Dean's List, Purdue University  
2023-2025 YONEX Eastern Collegiate Team Badminton Midwest Conference Champion

## Related Professional Skills

**Programming** C, C++, Python, MATLAB, C#, MicroPython, Arduino, Processing, HTML/CSS, Java

**Design** Figma, Adobe CC, Video Editing, AdaCAD, CAD: Rhino, Solidworks, Fusion 360, Catia, Blender

**Fabrication** 3D printing, Laser Cutting, Rapid Prototyping, Jacquard weaving

**Hardware** PCB Making, Soldering, ASIC Design

## Volunteering and Service

UIST 2023 Student Volunteer  
SIGGRAPH 2024 Student Volunteer

## Extra-Curricular Activities

- 2018-2023 Purdue Women's Basketball Club Team  
2019-2022 Purdue Equestrian Team  
2022-2025 Purdue Badminton Team