

# Yuning Su

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## Short Bio

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I am a second-year PhD student in computing science at the XDiscovery Lab, Simon Fraser University. Previously, I served as a Research Assistant in the school of Artificial Intelligence, Jilin University, China. I received my B.E. in communication engineering from Jilin University. My research in Human-Computer Interaction focuses on developing **computational material** to create room-scale smart environments and enhancing **haptic interaction** in VR/AR and mobile application.

## Education

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**Ph.D. Candidate, Simon Fraser University**, School of Computing Science Jan 2023 – Present

Advisor: Xing-Dong Yang  
Human-Computer Interaction, Computational Material, Haptics

**B.S., Jilin University**, Communication Engineering Sep 2015 – Jun 2019

- Measurement and Control Technology and Instrument (Major)
- Business English (Minor)

## Experience

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**Research Assistant, Jilin University**, School of Artificial Intelligence Sep 2019 – Sep 2022

Human-Computer Interaction, Haptics

**Developing haptic devices and applications** for VR/AR and mobile platforms, including haptic controller (WHC'21), Tri-Modal Tactile Display (HAPTICS'20 Demo), and stylus-based haptic interaction systems.

**Designing and implementing haptic rendering algorithms**, such as data-driven texture rendering and vibrotactile flow rendering, to enhance user immersion and interaction.

## Awards

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Computing Science Graduate Fellowship 2023, 2024

PhD Research Scholarship 2023, 2024

Outstanding Graduates of Jilin University (Top 5%) 2019

First-Class Scholarship (Top 5%) for four years 2015-2019

## Publications

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Tagnoo: Enabling Smart Room-Scale Environments with RFID-Augmented Plywood

*CHI '24: Proceedings of the 2024 CHI Conference on Human Factors in Computing Systems*

**Yuning Su**, Tingyu Zhang, Jiuen Feng, Yonghao Shi, Xing-Dong Yang, Te-Yen Wu

WooDowel: Electrode Isolation for Electromagnetic Shielding in Triboelectric Plywood Sensors

*CHI '24: Proceedings of the 2024 CHI Conference on Human Factors in Computing Systems*

Yonghao Shi, Chenzheng Li, **Yuning Su**, Xing-Dong Yang, Te-Yen Wu

Laser-Powered Vibrotactile Rendering

*Ubicomp'23: Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies*

**Yuning Su**, Yuhua Jin, Zhengqing Wang, Yonghao Shi, Da-Yuan Huang, Teng Han, Xing-Dong Yang

A QoE Physiological Measure of VR with Vibrotactile Feedback based on Frontal Lobe Power Asymmetry

*IEEE Transactions on Multimedia*, August 2023

Yan Zhang, **Yuning Su**, Xiaoying Sun

Design and Modeling of an Ungrounded Haptic Gun that Simulates Recoil Using Asymmetric Force

*WHC'21: 2021 IEEE World Haptics Conference*

Yuning Su; Weizhi Nai; Xiaoying Sun; Zuowei Sun

## Ongoing Research Projects

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**RF-Powered Smart Panel (Leader):** A computational plywood panel embedded with an SoC and accelerometer, wirelessly powered via RF energy for modular furniture applications. Achieves 96% recognition accuracy with real-time data transfer over BLE at a 500 Hz sampling rate.

(Submitted to CHI'25)

**Conductive and Transparent Plywood (Leader):** Developing a hidden display by creating micron holes on plywood with conductive material, allowing touch interaction on the surface of plywood.

**Battery-Free Wood Display (Collaborator):** A translucent basswood panel enabling visibility of the underlying LED pixels powered by RFID while retaining the aesthetic of a traditional wood surface.

(Submitted to CHI'25)

**Interactive Prototyping Toolkit (Collaborator):** A toolkit that simplifies prototyping of interactive objects using a software plugin and hardware module.

(Submitted to CHI'25)

## Completed Research Projects

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Funded by the National Natural Science Foundation of China and the National Key Research and Development Program of China

**Tri-Modal Tactile Display (Leader):** A tactile interface combining electrovibration, ultrasonic, and mechanical vibrations, showcased through a fruit classification game demo at the 2020 IEEE Haptics Symposium.

**Texture & Flow Rendering on Mobile (Leader):** Data-Driven texture rendering using a linear resonant actuator (LRA) and a dual-LRA setup to create vibrotactile flow illusions for mobile device interactions.

**Stylus-Based Haptic Interaction (Leader):** Haptic interface for stylus input via surface pen, enhancing user experience in digital writing and drawing.

## Academic Service

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### Reviewer

- CHI'25
- CHI'24, UIST'24, HAPTICS'24
- WHC'21

## Skills

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**Artificial Intelligence:** Deep learning models, data preprocessing, model optimization, and deployment.

**Augmented/Virtual Reality (AR/VR):** Development of interactive experiences using Unity3D, focusing on user interaction and 3D environments.

**Circuit & PCB Design:** Altium Designer for schematic design, layout, and fabrication of PCBs.

**Embedded Systems Development:** Nordic nRF, TI MSP, and Arduino platforms for IoT and hardware prototyping.

**Software Tools:** Matlab for signal processing, numerical analysis, and simulation.

**CAD & Mechanical Design:** Fusion 360 for 3D modeling, mechanical design, and rapid prototyping.