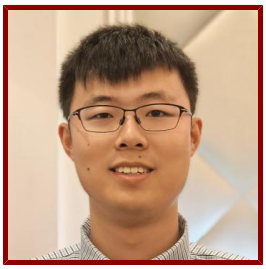
Stanford



Baiyu Shi

Ph.D. Student in Mechanical Engineering, admitted Autumn 2023

Bio

BIO

I am a PhD candidate in Mechanical Engineering at Stanford University, advised by Professor Zhenan Bao. My research focuses on electronic skin and tactile intelligence for robotics, combining scalable sensing technologies with robot learning to enable dexterous manipulation and safe physical interaction. I develop stretchable, conformable tactile sensing systems that help robots perceive and interact with the physical world.

Research & Scholarship

CURRENT RESEARCH AND SCHOLARLY INTERESTS

My research lies at the intersection of electronic skin and tactile intelligence for robotics, with a focus on dexterous manipulation and safe physical interaction. I develop scalable, high-performance sensing systems that give robots detailed information about contact with objects and their surroundings.

My work connects sensing hardware and mechanical design with robot learning to explore how touch can guide manipulation, particularly when visual information is limited. I am interested in both the physical design of tactile sensors and how robots learn to use their signals to adapt to different objects and tasks.

My broader interests include novel sensing modalities, human-robot interaction, and wearable technologies.

Publications

PUBLICATIONS

- **A Compact, Elastomeric Multimodal Sensor for Tactile Softness Discrimination** *ADVANCED MATERIALS TECHNOLOGIES*
  Berman, A., Shi, B., Kim, E., Root, S. E., Xu, C., Beker, L., Bao, Z.
  2025
- **A skin-inspired, capacitive array for tactile modulus detection via a scalable rigid-island architecture** *NPJ FLEXIBLE ELECTRONICS*
  Berman, A., Shi, B., Zaluska, T., Yong, A., Clees, S., Xu, C., Beker, L., Bao, Z.
  2025; 10 (1)
- **DexSkin: High-Coverage Conformable Robotic Skin for Learning Contact-Rich Manipulation**
  Wistreich, S., Shi, B., Tian, S., Clarke, S., Nath, M., Xu, C., Ban, Z., Wu, L.
  edited by Lim, J., Song, S., Park, H. W.
  JMLR-JOURNAL MACHINE LEARNING RESEARCH.2025: 769-793