Yingzhe Han

☎ +1 447-902-0272 | ✉ yih175@pitt.edu

🌐 Personal Website | in Linkedin | 🎓 Google Scholar

EDUCATION

- **Ph.D. student in Bioengineering** — 2024 - Present
  University of Pittsburgh, Pennsylvania, USA

- **M.S. in Engineering Mechanics** — 2024
  Xi'an Jiaotong University, Shaanxi, China

- **B.S. in Engineering Mechanics** — 2021
  Xi'an Jiaotong University, Shaanxi, China

SKILLS SUMMARY

- **Languages:** Python, Wolfram Mathematica, C++, Matlab
- **Software:** ABAQUS, Fiji, ParaView, Hypermesh
- **Research Interests:** Soft Tissue Biomechanics, Computational Modeling, FEM

WORK EXPERIENCE

- **Visiting Student** — Jul 2023 - May 2024
  Univeristy of Pittsburgh, Pennsylvania, USA
  Advisor: Ian A. Sigal
  - Developed a workflow for reconstructing 2D and 3D direct fiber models of the entire lamina cribrosa.
  - Integrated string-art method and pathfinding algorithms into model reconstrcution to improve alignment with imaging data.
  - Optimized collagen fiber tracing algorithm for improved accuracy and compatibility with finite element analysis.

- **Research Assistant** — Jul 2022 - Jun 2023
  Shanghai Jiao Tong Univeristy, Shanghai, China
  Advisor: Shengxian Tu
  - Developed finite element modeling workflow for coronary, incorporating calcified plaques and lipid pools based on OCT imagery.
  - Simulated balloon dilation and stent expansion processes in coronary to analyze the mechanical responses of various tissue types.
  - Investigated the impact of lipid pools and calcified plaques on vascular wall stress across diverse locations and sizes.

- **Graduate Researcher** — Sep 2021 - Jun 2024
  Xi'an Jiaotong Univeristy, Shaanxi, China
  Advisor: Luxian Li
  - Developed a general shear deformation theory for non-Euclidean thin plates using curvilinear coordinates.
  - Applied the theory to non-Euclidean punctured disks, analyzing spontaneous deformation and critical buckling.
  - Evaluated the influence of Gaussian curvature on buckling behavior and critical thickness in punctured disks.
  - Simplified the spontaneous deformation of non-Euclidean narrow strips to a one-dimensional problem, analyzing helical morphology and residual stresses.

- **Undegraduate Researcher** — Nov 2020 - Jul 2021
  Xi'an Jiaotong Univeristy, Shaanxi, China
  Advisor: Guiping Zhao
  - Derived the theoretical equivalent stiffness for sandwich structure incorporating hierarchical pyramidal lattice trusses.
  - Explored the correlation between mechanical properties and geometric parameters through hierarchical parametric modeling.

HONORS AND AWARDS

- **University Graduate Scholarship** — 2023
  Xi'an Jiaotong University, Shaanxi, China

- **University Graduate Scholarship** — 2022
  Xi'an Jiaotong University, Shaanxi, China

- **University Undergraduate Scholarship** — 2020
  Xi'an Jiaotong University, Shaanxi, China

Poster Sessions

1. **Han**, **Y.**, Wang, B., He, X., Lu, Y., & Sigal, I. A. (2024a). Evaluating the effects of fiber force dissipation for predicting the effects of modulating the mechanical properties of lamina cribrosa and sclera. *Investigative Ophthalmology & Visual Science*, *65*(7), 1203–1203. [PDF].

2. Wang, B., Waxman, S., Lusvardi, S., Lu, Y., **Han**, **Y.**, Linton, A. R., Qi, T., & Sigal, I. A. (2024). Axons passing through small lc pores suffer larger iop-induced distortions than those through large pores. *Investigative Ophthalmology & Visual Science*, *65*(7), 1205–1205. [PDF].

3. **Han**, **Y.**, Wang, B., He, X., Lu, Y., & Sigal, I. A. (2024b). Using fiber modeling to understand the effects of modulating tissue mechanical properties as a preventative treatment for glaucoma. *Proceedings of Summer Biomechanics, Bioengineering and Biotransport Conference (SB^{3}C)*. [PDF].

Oral Presentations

Presenter underlined if not Yingzhe Han.