

Yang Yang

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EDUCATION

Sichuan University

Sep 2021 - Jun 2025 (expected)

B.ENG. at Department of Mechanics and Engineering Science & Wu Yuzhang Honors College (Top 3%)

Major: Mechanics

Overall GPA: 3.81/4 (90.03/100)

Important Courses: Calculus, Advanced Algebra, Theoretical Mechanics, Mechanics of Material, C Programming, Mathematical Methods in Engineering, Continuum Mechanics, Structural Mechanics, Fluid Mechanics, Computational Mechanics, Experimental Mechanics, Vibration Mechanics, Robotic Manipulation (MIT online course), Deep Learning (Stanford online course)

RESEARCH INTERESTS

My research interests are in Robotic Perception and Manipulation, Deep Learning and Mechanics. They encompass tactile sensing, contact mechanics, and dexterous manipulation. I am particularly interested in the design of tactile sensors and the application of tactile sensing to enhance robotic dexterous manipulation and surgical procedures.

PUBLICATIONS AND PATENTS (* indicates contribute equally, J. = Journal, C. = Conference, P. = Patent)

[J.1] A deep learning approach for low-cycle fatigue life prediction under thermal-mechanical loading based on a novel neural network model

Yang Yang, Bo Zhang, Hao Wu, Yida Zhang, Hong Zhang (*advisor*), Yongjie Liu, Qingyuan Wang

Engineering Fracture Mechanics, <https://doi.org/10.1016/j.engfracmech.2024.110239>, **Top Journal in Mechanics**

[J.2] Machine-learning and finite element-based temperature- and rate-dependent plasticity model: application to the tensile behaviour on MarBN steel

Bo Zhang, Yang Yang, Hao Wu, Yida Zhang, Quanyi Wang, Hong Zhang (*advisor*), Yongjie Liu, Qingyuan Wang

Journal of Materials Engineering and Performance, <https://doi.org/10.1007/s11665-024-10167-5>

[J.3] **Vitire**: A Bimodel Visuotactile Tire with High-Resolution Sensing Capability

Shoujie Li*, Jianle Xu*, Tong Wu, Yang Yang, Yanbo Chen, Xueqian Wang, Wenbo Ding (*advisor*), Xiao-ping Zhang

IEEE Transactions on Mechatronics (**Under Review**)

[C.4] Three-dimension Tip Force Perception and Axial Contact Location Identification for Flexible Endoscopes using Tissue-compliant Soft Distal Attachment Cap Sensors

Tao Zhang*, Yang Yang^{1*}, Yang Yang², Huxin Gao, Jiewen Lai, Hongliang Ren (*advisor*)

Submitted to *International Conference on Robotics & Automation (ICRA 2025)*

[P.5] A novel approach for low-cycle fatigue life prediction based on deep learning

Hong Zhang (*advisor*), Yang Yang, Bo Zhang, Zhengwei Hu, Yongjie Liu, Qingyuan Wang

CN Invention Patent, CN117725846A, **Grant**

[P.6] A method of calculating a temperature and strain rate dependent plastic hardening model for metallic materials

Hong Zhang (*advisor*), Bo Zhang, Yang Yang, Zhengwei Hu, Yongjie Liu, Qingyuan Wang

CN Invention Patent, CN117558381A, **Grant**

INTERNSHIP EXPERIENCES

Research Assistant

Oct 2024 - May 2025 (expected)

The Chinese University of Hong Kong (CUHK), Supervised by [Hongliang Ren](#)

Lab: Lab of Robotics, Embodied AI, Navigation in vivo ([LabREN](#))

Summer Research Intern

Jun 2024 - Aug 2024

Tsinghua University (THU), Supervised by [Wenbo Ding](#)

Lab: Smart Sensing and Robotics Group ([SSR Group](#))

Summer Research Intern

Jun 2023 - Aug 2023

Shanghai Jiao Tong University (SJTU), Supervised by [Daolin Ma](#)

Lab: Manipulation Perception and Intelligence Lab ([MPI Lab](#))

RESEARCH EXPERIENCES

Tactile Perception in Surgical Procedure

May 2024 - Present

The Chinese University of Hong Kong, Supervised by [Hongliang Ren](#)

- ✧ FBG-based Perception in Flexible Endoscope
 - Simulated various loading conditions for Fiber Bragg Grating (FBG) based sensor to assess the sensing capability of multi-mode (radial force, axial force, and axial contact location) tissue-compliant sensor
 - Submitted a conference manuscript to the International Conference on Robotics & Automation (ICRA 2025)
- ✧ Vision-based Tactile Sensing for Pharyngeal Localization
 - Developed a homemade vision-based tactile sensor, including fabricated Sensing, Imaging, and Lighting Module
 - Calibrated the camera and obtained the mapping from pixel to depth

Simulation, Learning and Reconstruction for Vision-based Tactile Sensor

Mar 2024 - Sep 2024

Tsinghua University, Supervised by [Wenbo Ding](#)

- ✧ Fingertip-shaped vision-based tactile sensor
 - Generated a dataset for visuo-tactile sensor using simulation and obtained the force and displacement information of the markers
 - Predicted force distribution from the binary images of sensing elastomer using a Neural Network
 - Developed algorithms for real-time marker points tracking and 3D reconstruction
- ✧ Simulation for A Bimodal Visuo-tactile Tire
 - Simulated the static loading for tire and obtained the relationship between offset and force
 - Submitted a Journal manuscript to IEEE Transaction on Mechatronics

In-situ Mechanical Parameters Calibration for Visuo-Tactile Sensor (GelSlim)

Jun 2023 - Nov 2023

Shanghai Jiao Tong University, Supervised by [Daolin Ma](#)

- Established a dataset using finite element method simulation
- Utilized a Transformer model to learn the relationship between mechanical parameters and boundary condition
- Demonstrated the model in a real-world experiment, achieving an error of 0.03 MPa for Young's modulus and 0.006 for Poisson's ratio

Deep Learning for Low-cycle Fatigue Life Prediction

Jun 2023 - Oct 2023

Sichuan University, Supervised by [Hong Zhang](#)

- Proposed a novel neural network model, ConTrans, for low-fatigue life prediction
- Validated the model by using four different materials with all prediction results in 2-factor error band
- Published a paper in the journal 'Engineering Fracture Mechanics' and obtained a China invention patent

TEACHING ASSISTANT

Course: Structural Mechanics

Feb 2024 - Jun 2024

Department of Mechanics and Engineering Science, Sichuan University

- Collaborated with the professor to support students in understanding complex concepts related to structural mechanics
- Assisted in grading and providing constructive feedback on test papers and assignments
- Served as a liaison between students and the professor, addressing students' queries and concerns effectively

HONORS AND AWARDS

First Prize of Sichuan Mechanics Competition Individual Race (Top 2%)	2023
First Prize of Sichuan Mechanics Competition Group Race (Leader) (Top 2%)	2023
First Prize of Academic Scholarship at Sichuan University (Top 3%)	2023
Outstanding Students of Sichuan University (Top 5%)	2023
Wu Yuzhang Honors College Scholarship of Excellence (Top 5%)	2022, 2023

SKILLS

Programming: C++, Python (Pytorch)

Platform/System: Finite Element Method, SolidWorks, MATLAB, Ubuntu, Linux, VS Code, Gazebo, ROS (Beginner)

Hardware: Fabrication of Vision-based Tactile Sensor (3D Printer, Raspberry pi, Printed Circuit Board, Vacuum drying oven)

Languages: Mandarin (Native), English (Fluent)