

Xing Ye

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Department of Precision Instrument, Tsinghua University | Shenzhen, China, 518055

EDUCATION

Tsinghua University

Sep 2018 – Jul 2021 (Anticipated)

Master of Engineering, Instrument and Meter Engineering

Thesis: Design and fabrication of pneumatic soft actuators for robotic and biomedical applications

Thesis supervisor: Professor Xiang Qian

GPA: 3.94/4.00

China Medical University

Sep 2013 – Jul 2018

Bachelor of Medicine, Stomatology

GPA: 82.4%

RESEARCH EXPERIENCE

Shenzhen International Graduate School, Tsinghua University

Dec 2018 – Present

Student Researcher

- **Soft robotic heart pumped by pneumatic actuators**
 - Developed a soft robotic heart made of silicone rubber based on models from a 3D anatomy database
 - Created leaflet silicone heart valves using customized 3D-printed molds
 - Actuated the heart model by wrapping vacuum-powered origami-inspired artificial circular muscles
 - Programmed the actuators to contract and relax periodically using a microcontroller and acquired intracardiac data within LabVIEW
- **Soft robotic grasper and manipulator based on pneumatic torsional actuators**
 - Designed a vacuum-driven lightweight torsional actuator that generates rotary motions
 - Built finite element models to optimize parameters for torsional actuators in ANSYS
 - Captured and analyzed the trajectories of actuators in MATLAB using a high-speed camera
 - Fabricated a pneumatic grasper capable of holding various objects and developed soft manipulators for laboratory automation based on torsional actuators
- Video demonstrations available at <https://xingye0120.github.io/>

PUBLICATION

Journal article

- **Xing Ye**, Shidong Zhu, Xiang Qian, Min Zhang, Xiaohao Wang, V-shape Pneumatic Torsional Actuator: A Building Block for Soft Grasper and Manipulator (Under review; Revision submitted to *Soft Robotics*)

Patents

- Xiang Qian, **Xing Ye**, Shidong Zhu, Min Zhang, Xiaohao Wang, Pneumatic torsional actuators and applications in robotic manipulation (202010966077.X)
- Shidong Zhu, **Xing Ye**, Xiaohao Wang, Xiang Qian, Xinghui Li, A silicone elastomer-based robotic cardiac simulator (202010966049.8)

HONORS AND AWARDS

- 2nd Prize, Finalist, National Postgraduate Robot Innovative Design Competition *Sep 2020*
- Scholarship for Outstanding Students, Tsinghua University *2019 – 2020*
- Scholarship for Outstanding Students, Tsinghua University *2018 – 2019*

WORK EXPERIENCE

Shenzhen Vivo-light Medical Device & Technology Co., Ltd.

Jul 2019 – Sep 2019

Research Intern

- **Intracranial pressure monitoring catheter prototype**
 - Helped develop an ICP monitoring device with a built-in pressure sensor at the tip of a catheter
 - Incorporated piezoresistive pressure sensor dies into catheters by wire bonding
 - Tested and evaluated the performance of the ICP device on in vitro models under various environments

Hospital of Stomatology, China Medical University

Jun 2017 – Jun 2018

Clinical Clerkship

- Performed clinical assessments, examinations, treatments and compiled case reports under the supervision of attending physicians, rotating through different departments in the hospital

TECHNICAL SKILLS

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| Programming | Java, C, MATLAB, LabVIEW, Arduino, Android development |
| Prototyping | 3D printing, laser cutting, soft robotic fabrication, silicone casting, PCB design |
| CAD & FEM | ANSYS, Solidworks, AutoCAD, Inventor, Geomagic |
| Graphics | Photoshop, Illustrator, VideoStudio |