

Yuxuan LIU

Nationality: Chinese | Languages: English, Mandarin
Mobile: +1 (215) 921-1256 | Email: liuyx02@seas.upenn.edu

EDUCATION

School of Engineering and Applied Science, University of Pennsylvania

Philadelphia, PA

Master of Science in Engineering, Bioengineering (GPA: 3.8/4.0)

Sep 2024 – Now

- Biomedical Image Analysis, Big Data Analysis, Engineering Negotiation, Bioinformatics
- Brain-Computer Interface, Database and Information Systems, Numerical Methods and Modeling.

College of Chemistry and Life Science, Beijing University of Technology

Beijing, China

Bachelor of Engineering, Biomedical Engineering (GPA: 86/100)

Sep 2020 – Jul 2024

- Medical Image Processing, Digital Signal Processing, C++ Programming, Biomedical Electronics.
- Beijing University of Technology Undergraduate Scholarship for the 2022-2023 Academic Year - Beijing University of Technology Innovation and Entrepreneurship Award.

PROJECTS

Automated methods and software development for calculating bone strength based on CT images

(Undergraduate Graduation Project) Feb 2024 - Jun 2024

- Developed a software that enables automated vertebral segmentation, 3D reconstruction, cubic mesh creation and material mapping based on QCT for biomechanical finite element analysis with an easy-to-use UI.
- Unify and automate biomechanical analysis workflows in the lab.

PoroSpine

Feb 2023 - Dec 2023

- Developed a labeling software for spinal MRI research using VTK, ITK, and Qt.
- Calculates and summarizes labeling results into a diagnostic report template to streamline physician reporting.

Intelligent Surgical Planning System for Percutaneous Pedicle Screw Fixation Based on CT Images

March 2021 - Jul 2024

- Project lead for an automatic screw placement planning algorithm.
- Implemented placement algorithms and optimized surgical planning efficiency for percutaneous pedicle screw fixation.
- Optimized overall system design around physician workflows for easy clinical use.
- Currently on third iteration.

Software Control System for In Situ Hybridization Instruments

Sep 2020 - Dec 2022

Formulation Engineer (Internship)

- Independently developed and maintained an embedded software control system for in situ hybridization instruments, including hardware process controlling, driver programming, and user interface designing.

PUBLICATIONS

Research:

- Bone mineral density surrounding the screw thread predicts the risk of pedicle screw loosening, *Journal of Biomechanics* (Co-First Author)
- A Novel Screw Modeling Approach to Study the Effects of Screw Parameters on Pullout Strength, *Journal of Biomechanical Engineering* (Co-Author)
- Mechanical testing and biomechanical CT analysis to assess vertebral flexion strength of Chinese cadavers, *Medical Engineering & Physics* (Co-Author)
- Craniocaudal toggling increases the risk of screw loosening in osteoporotic vertebrae, *Computer Methods and Programs in Biomedicine* (Co-Author)
- Smart Surgical Planning System for Percutaneous Pedicle Screw Fixation Based on CT Images, Version 1.0. Registered with the National Copyright Administration of China (2023SR0683256).
- MRQS-PoroSpine Software Version 1.0. Registered with the National Copyright Administration of China (2023SR0683212).