Yisong Zhao

Faculty of Surgery

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EDUCATION

The Chinese University of Hong Kong　　　　　　　　　　　　　　　　Paris, France

Phd in Surgery　　　　　　　　　　　　　　　　　　　　　　　Sept 2024 – Present

- Project:
    1. Mechanical structure design of continuum robot
    2. Innovation of servo algorithm based on photoacoustic image navigation.

The Chinese University of Hong Kong　　　　　　　　　　　　　　　　Paris, France

RA in EE (Electronic Engineering)　　　　　　　　　　　　　Mar 2023 – Sep 2024

- Project:
    1. Design of in vitro photoacoustic probe based on image navigation.
    2. Design of motion control of flexible robot.

Sorbonne Universite　　　　　　　　　　　　　　　　　　　　　　　Paris, France

MS in Communicating Systems　　　　　　　　　　　　　　　Sept 2021 – Jun 2023

- Courses: Electronics of analog systems, Transmission lines and guiding structures, Numerical methods, Python object programming, Random signal processing, Digital signal and data processing

Sorbonne Universite　　　　　　　　　　　　　　　　　　　　　　　Paris, France

BS in EEA (Electrique Energie Automatique) and Mathematical　　　Sept 2019 – Jun 2021

- Note: 13.8/20 (Licence 2)
- Note: 12.05/20 (Licence 3)
- Courses: Algebra and arithmetic, Linear and Bilinear Algebra I, Digital series and function series, Introduction to probability, Linear differential equations, numerical methods, Elementary functions of electronics, Multiple vector and integral analysis, Electrostatic and electrokinetic, Combinatorial and sequential digital electronics, Mathematical tools for signal processing, Initiation to programming in C or programming in C, Magnetism

Paris Diderot Universite　　　　　　　　　　　　　　　　　　　　Paris, France

BS in Physique and Mathematical　　　　　　　　　　　　　Dec 2018 – Jun 2019

- Note: 18.6/20

Universite Paris XI　　　　　　　　　　　　　　　　　　　　　　　Paris, France

University diploma in French as a foreign language　　　　　　　Sept 2018 – Jun 2019

PROJECT EXPERIENCE

Photoacoustic probe design　　　　　　　　　　　　　　　　　　　Hong Kong

Member, Project Group　　　　　　　　　　　　　　　　　　Mar 2023 – Sep 2024

- Designed three types of probes, including
    1. A micro photoacoustic endoscopy probe for use with a continuum robot,
    2. A probe for scanning limbs mounted on a robotic arm outside the body
    3. An umbrella-shaped probe for gastric cancer detection.

    Also complete the photoacoustic image reconstruction algorithms for different probes.

Significance: Have a deeper understanding of the types of robotic systems required in various medical environments to assist clinicians in making diagnoses. In addition, the exploration of the design requirements of photoacoustic probes in different detection environments has laid a solid hardware foundation for future in vivo and in vitro photoacoustic imaging applications.

An umbrella-inspired snap-on robotic 3D photoacoustic endoscopic probe for augmented intragastric sensing

Hong Kong

Member, Project Group

July 2023 – Sep 2023

. The project uses a robotic arm equipped with a photoacoustic probe, which for the first time can fully automatically scan the palm and arm and reconstruct the vascular structure of the entire arm through advanced image processing.

. **Skill:** Path planning, Photoacoustic signal processing, Photoacoustic image reconstruction, Robotic arm servo algorithm

FR5 robotic arm fully automatic photoacoustic scanning palm arm image reconstruction   Hong Kong

Member, Project Group

Oct 2024 – Present

. The project uses a robotic arm equipped with a photoacoustic probe, which for the first time can fully automatically scan the palm and arm and reconstruct the vascular structure of the entire arm through advanced image processing.

. **Skill:** Path planning, Photoacoustic signal processing, Photoacoustic image reconstruction, Robotic arm servo algorithm

In vivo photoacoustic scanning using a flexible robot equipped with a micro-photoacoustic probe   Hong Kong

Member, Project Group

Aug 2023 – Present

. The project uses a robotic arm equipped with a photoacoustic probe, which for the first time can fully automatically scan the palm and arm and reconstruct the vascular structure of the entire arm through advanced image processing.

. Path planning, Photoacoustic signal processing, Photoacoustic image reconstruction, Robotic arm servo algorithm

PUBLICATIONS

1. Yi-Song Zhao "An umbrella-inspired snap-on robotic 3D photoacoustic endoscopic probe

for augmented intragastric sensing: Proof of concept study", Dec 2023, *Photoacoustics 35 (2024) 100568*

ADDITIONAL INFORMATION

Language

. English (TOEFL: 104 GRE: 329+3.5), Chinese (Native), French (DELF: C1)

Computer Skills

. C, C++, VHDL, Zmotion，Mathematica， LTSpice, Vivado, MATLAB & Simulink, Xboard, PCB Eagle, Quartus, MBED, Altium, Python, Office