Yunhui Jiang

No. 166 Ren'ai Road, Huqiu District, Suzhou, China

Tel: +86 15177350527 | Email: jiangyh2022@shanghaitech.edu.cn | Web: https://yunhui-jiang.github.io/

Education

ShanghaiTech University   Shanghai, China
M.Sc. in Electronic Science and Technology   *Sept. 2022 – June 2025*
- GPA: 3.48/4.0
- Supervisor: Prof. Fei Gao, Prof. Xiran Cai
- Thesis: Research on photoacoustic ultrasound dual-modal imaging system based on low-cost opto-acoustic window

Xi'an University of Posts and Telecommunications   Xi'an, China
B.S. in Optoelectronic Information Science and Engineering   *Sept. 2017 – June 2021*
- GPA: 3.41/4.0 (Average Score: 85.59/100, Rank: 3/256)
- Thesis: High-Temperature Storage Characteristics of Ga_2O_3 with Ti/Al/Pt/Au Multilayer Ohmic Contacts

Working Papers

1. *Yunhui Jiang*, Fan Zhang, Yuwei Zheng, Ruixi Sun, Xiran Cai*, and Fei Gao*, "Disposable Opto-Acoustic Window Enabled Plug-and-Play Photoacoustic-Ultrasound Dual-modal Imaging", *Optics Letters* (2025) [PDF]

2. Sheng Liao, Ruixi Sun, *Yunhui Jiang*, Fan Zhang, Youshen Xiao, Yuwei Zheng, Hengrong Lan, Fei Gao*, "Photoacoustic tomography of human eye and oxygenation quantification: a feasibility study", *Optics Letters* (2025) **Under Review**

3. Kaili Ren, Minhui Cheng, Liyong Ren, *Yunhui Jiang*, Dongdong Han, Yongkai Wang, Jun Dong, Jihong Liu, Li Yang, and Zhanqiang Xi, "Ultra-broadband conversion of OAM mode near the dispersion turning point in helical fiber gratings", *OSA Continuum* (2020) [PDF]

4. Youshen Xiao, Zhengyuan Zhang, Ruixi Sun, Yiling Shi, Sheng Liao, Fan Zhang, *Yunhui Jiang*, Xiyu Chen, Arunima Sharma, Manojit Pramanik, Yuyao Zhang*, Fei Gao*, "Resolution Enhancement of Under-sampled Photoacoustic Microscopy Images using Neural Representation", *IEEE Transactions on Computational Imaging* (2025) [PDF]

Research Experience

1. **Programmable Laser-Induced Ultrasound Design and Simulation via k-Wave**
   Principal Investigator, Ongoing   *July 2025 – Present*
   - Designed spatially patterned optical absorbers to generate laser-induced ultrasound with tunable directionality and amplitude under pulsed excitation
   - Applied phased-array principles by encoding spatial phase delays through absorber geometry, enabling programmable beam steering and dynamic acoustic focusing
   - Developed a k-Wave simulation framework to model ultrasound propagation and assess focusing performance in water and heterogeneous tissue-mimicking media
   - Analyzed resolution and energy distribution across different pattern configurations to guide the practical design of flexible acoustic focusing patches

2. **Dual-modal Photoacoustic-Ultrasound Imaging Using Laser-Induced Ultrasound from Black Tape**
   Principal Investigator, Published in **Optics Letters**   *July 2024 – June 2025*
   - Designed a plug-and-play opto-acoustic window enabling coaxial photoacoustic and ultrasound imaging triggered by a single laser pulse
   - Streamlined the fabrication process using black PVC tape, achieved high reproducibility and low cost

- Validated signal stability and dual-modal imaging performance through *ex vivo* and *in vivo* experiments on various phantoms and human tissues

3. **Noninvasive Intracranial Pressure(ICP) Monitoring via Transcranial Photoacoustic Imaging**

   Co-Investigator, Completed Project   *Aug. 2024 – Feb. 2025*

   - Developed a customized photoacoustic imaging platform integrating a tunable near infrared laser, linear-array ultrasound probe, high-speed DAQ, and a stabilized transcranial probe mount
   - Conducted *in vivo* transcranial photoacoustic imaging experiments on human volunteers with physicians, synchronized with invasive ICP monitoring to enable validation against clinical gold-standard measurements
   - Developed a linear regression model correlating photoacoustic-derived sO_2 with measured ICP, demonstrated a strong inverse relationship

4. **Speckle Imaging through Scattering Layers**

   Primary contributor, Course: Biomedical Photonics and Imaging   *Sept. 2024 – Jan. 2025*

   - Reproduced speckle imaging methods using memory effect for optical reconstruction
   - Evaluated imaging methods for high-resolution, wide-FoV reconstruction, validating performance under dynamic and complex scattering conditions

5. **Development and Integration of Data Acquisition(DAQ) for Real-Time Photoacoustic Imaging**

   Principal Investigator, Completed and in active use   *Sept. 2023 – June 2024*

   - Diagnosed and resolved key signal acquisition issues in a designed DAQ system for stable data capture
   - Integrated DAQ into the photoacoustic imaging system for optimized performance
   - Conducted *ex vivo* and *in vivo* experiments to validate acquisition stability and imaging quality in functional and structural imaging

6. **Mini Review: Algorithms for Photonic Spiking Neural Networks**

   Course-based Research Project, Course: Optical Computing and Optical Neural Networks   *Sept. 2022 – May. 2023*

   - Reviewed spiking neuron models in biology and photonics for neuromorphic computing frameworks
   - Analyzed spike encoding and photonic spike timing dependent plasticity mechanisms implemented via semiconductor optical amplifiers and electro-absorption modulators
   - Evaluated photonic spiking neural networks for fully optical implementations and proposed enhancements to spike-based supervised learning algorithms

Awards and Honours

Outstanding Graduate of ShanghaiTech University	*2025*
National Graduate Academic Scholarship	*2022, 2023, 2024*
University-Level Graduate Scholarship	*2022, 2023, 2024*
Outstanding Graduate of Shaanxi Province	*2021*
National Encouragement Scholarship	*2019, 2020*
Shanghai Way-on Semiconductor Co., Ltd. Scholarship	*2019*

Skills

Programming Language: Matlab, Python, LaTeX, Markdown

Professional software: Solidworks, Comsol, Auto-CAD, Origin, 3D Slicer, 3ds Max, KeyShot

Languages: Mandarin (Native), English (Fluent)