Tianyu Xia

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EDUCATION

Zhejiang University *Hangzhou, China*

B.Eng. in Opto-Electronics Science and Engineering *Sep. 2021 – Jun. 2025 (Expected)*

- **Third year GPA: 3.82/4.00,** Overall GPA: 3.67/4.00
- Courses: Physical Optics: 3.90/4.00, Applied Optics: 3.90/4.00, Applied OptoelectronicsLab: 3.90/4.00

RESEARCH EXPERIENCE

Boston University (Dept. of Electrical & Computer Engineering) **Advisor: Prof. Jixin Cheng**

Extracting MIP signals from water background using PLS for lipid synthesis study *Jul. 2024 - Aug. 2024*

- Developed a novel background removal algorithm tailored for hyperspectral data to effectively isolate signal peaks from the background noise; Implemented the method on MIP and SRS data
- Extracted peaks while preserving the spatial and intensity characteristics of the original signals; Demonstrated better performance with better accuracy and robustness over traditional subtraction method
- Provided a versatile solution for background removal in hyperspectral imaging data; Established a standardized procedure for detecting signals of specific cellular structures
- Detected fatty acid unsaturation in cancer cells via MIP image process; Separated the lipids for statistical research; Verified the hypothesis through quantitative analysis

Zhejiang University (College of Optical Science and Engineering) **Advisor: Prof. Huafeng Liu**

Deep learning for enhancing reconstruction performance of PET via TOF information *Mar. 2024 - Present*

- Leveraged a Linux-based simulation system to generate comprehensive training data for machine learning
- Gained expertise in Deep learning based Positron Emission Tomography (PET) reconstruction algorithm via Time Of Flight (TOF) information combining Convolutional Neural Network (CNN) and Transformer
- Transformed original regression network to a classification network to reduce Coincidence Time Resolution (CTR)

Zhejiang University (College of Optical Science and Engineering)

- Developed an eye-tracking interaction system based on Conv-LSTM using DVS data
- Created an image processing algorithm for silicon wafer counting based on Matlab
- Contributed to a PCB circuit design and programming project
- Designed optical lenses based on Zemax

PUBLICATION

- Xinyan Teng, **Tianyu Xia**, Jiaze Yin, Guangrui Ding, Jianpeng Ao, Mingsheng Li, Haonan Lin, Daniela Mateia, Hongjian He*, Ji-Xin Cheng*, "Measuring Fatty Acid Unsaturation in Cancer Cells via Mid-Infrared Photothermal Imaging." *(Manuscript in Preparation)*

LEADERSHIP & VOLUNTEER EXPERIENCE

- Served as the main person in charge of the community of Drama Society
- Participated in social practices about Traditional Theatre; Received School-level Outstanding Social Practice awards
- Undertook volunteer activities for more than 20 hours

PERSONAL ABILITY

- Programming: Advanced in Matlab, PyTorch, C++, Zemax
- Language skills: TOEFL 103 (R:26 L:28 S:21 W:28); GRE 322 (153+169)