

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)
- Mastered in machine learning and simulation systems programming based on Python

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; Evolved in the preparation and performance of multiple shows with an audience of over a thousand people
- 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
- Experienced in two overseas exchange programs and fluent in English communication