Jean Liu

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Education

University of Michigan
M.S. in Robotics *Sep 2023 - May 2025*
M.S. in Digital and Material Technology *July 2022 - May 2023*
Master of Architecture *July 2021 - May 2025*
- **Coursework:** Deep Learning, 3D perception, Data Structure and Algorithm, Robot Kinematics

Tongji University
B.S. in Civil Engineering *Sep 2023 - May 2025*
- **Coursework:** Structural Mechanics, Engineering Mechanics, Fluid Mechanics, Spatial Structure

Experience

Six Dimensional Pose Estimation Using RGB Camera *Jan 2024 - Oct 2024*
Instructor: Kira Barton, Dawn Tilbury — University of Michigan
- Developed a vectorized mesh rendering engine with PyTorch for processing 3D meshes and camera parameters.
- Trained a YOLOv8-based classification model using simulated images and validated on real-world datasets.
- Designed a 6D pose estimation algorithm by applying PnP method between simulation and real images iteratively.
- Proposed a novel encoder-decoder architecture for refining 6D pose estimation. Integrated graph-based representations, Legendre polynomial with spatial attention to enhance accuracy.

Defect Detection of Building Façade Based on Deep Learning *May 2023 - Aug 2023*
Instructor: Yujie Lu — Tongji University
- Investigated thermal and visual image fusion technologies, and enhanced RTFNeT to innovate feature extraction and fusion techniques at various stages for better accuracy.
- Rewrite the ByteTrack model to convert it from single class to multi-classes detection.

Multimodality: Generate Video Comments by Using Video Contexts *Dec 2022 - July 2024*
Instructor: Tommy — Technische Universität Berlin
- Proposed a multi-modality framework for generating attractive live video comments from video and text inputs.
- Introduced a semantic gap contrastive learning loss to narrow the gap between generated comments and those that are more liked, while distancing them from less liked or unliked comments.

Projects

Experimental UAS
Instructor: Perter Gaskell —— University of Michigan
- Built a quad rotor from parts, performed system identification, and implemented attitude and position control.
- Proposed a workflow to recognize, track, and follow moving people along with an innovation in structure design.

Computational Symmetry in AI and Robotics
Instructor: Perter Gaskell —— University of Michigan
- Built a quad rotor from parts, performed system identification, and implemented attitude and position control.

Publication

- **Xiujin Liu**[1], Feng Xue[1], Xiaoxiao Du*, "Attention Regulation for Efficient Semantic Segmentation on Unstructured Terrain", **Accepted** by **IEEE ICCAS** 2024.

Skills

Program Language: Python, C++, MATLAB, Processing, Grasshopper
Frameworks and Software Linux, SLAM, Cuda, ROS, Pytorch, Sklearn, Git
Others: Rhino, AutoCAD, Adobe Suit, Revit, Microsoft Office Suite