# Chenghao (Tommy) Jiang

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## Education

**University of Wisconsin Madison** *Sept. 2024 – Dec. 2025*
*MS in Electrical and Computer Engineering* *(Expected)*
- **Course:** Learning based Image Synthesis, High Performance Computing, Reinforcement Learning

**University of Manchester** *Sept. 2022 – Dec. 2023*
*MS in Communication and Signal Processing*
- GPA: 75.5/100, **Distinction** Honor

**Changchun University of Science and Technology** *Sept. 2018 – June 2022*
*BEng in Optoelectronic Information Science and Engineering*
- GPA: 3.86/5.00, Rank:10/221

## Research Experience

**Privacy-Aware Sensor Data for Cooperative Perception** *Madison, WI*
*Supervised by Prof. Akarsh Prabhakara* *June 2025 – July 2025*
- Explored cooperative SLAM under privacy constraints using the SHARP framework, where a contributor vehicle transmits pointmap-based novel view renderings instead of raw images to balance localization performance and privacy protection.
- Set up and evaluated the *VGGT* system for SLAM task on OPV2V dataset, comparing localization accuracy across three modes: ego-only input, SHARP-generated views, and raw multi-agent input.
- Modified the CARLA simulator within OPV2V to add a depth sensor, enabling point cloud rescaling and downstream tasks like object detection based on accurate 3D structure recovery.

**RoMA-SLAM: Robust SLAM System Based on Dense Matching** *Madison, WI*
*Supervised by Prof. Mohit Gupta* *Feb. 2025 – May 2025*
- Designed a **RoMA-based** SLAM pipeline inspired by the structure of *MAST3R-SLAM*, leveraging dense matching as the only input modality and achieving robust camera tracking through 3D point cloud alignment using SVD-based pose estimation.
- Constructed a keyframe-driven backend with global pose graph optimization, where loop closures and inter-frame correspondences are incorporated to jointly refine camera trajectories using dense pixel-level matches.
- Implemented post-optimization triangulation for 3D reconstruction, selecting multi-view correspondences with high matching confidence to solve projection equations and recover accurate 3D point positions.

**Binary CNN Design and Application on Computational Camera Scamp5d** *Manchester, UK*
*Supervised by Prof. Piotr Dudek* *June 2023 – Sept. 2023*
- Designed and implemented a binary convolutional neural network adapted on the special computing architecture of Scamp5d, the intelligent camera designed by Piotr.
- Separated the traditional convolution unit into depth-wise convolution and channel-wise convolution, reducing the parameter number and FLOPS of the model.
- Issued a novel convolution strategy of calculating the Hadamard products of the input photo and a kernel map composed of repeated convolution kernel, conducing the convolution on different regions happen parallelly and accelerating the convolution on a single channel.

## Publications

1. Bangya Liu, ***Chenghao Jiang***, Chengpo Yan, Suman Banerjee, Akarsh Prabhakara, "Privacy-Aware Sharing of Raw Spatial Sensor Data for Cooperative Perception", *HotNets 2025* (UNDER REVIEW)