Zhe Jun Tang, Ph.D

Email : zack@zhejuntang.com

website: https://www.zhejuntang.com

Education

- **Nanyang Technological University** — Singapore
  Doctor of Philosophy in Computer Science — **2019 - 2025**
  Courses: Stochastic Processes, Convex Optimisation, Numerical Methods, Neural Networks, Deep Learning
  Thesis: Advancing 3D Scene Understanding Through Discriminative and Generative Learning
- **University of Oxford** — Oxford, U.K.
  Masters in Eng. Science | Non-Graduating Study Abroad Year; Thesis Graded First — **2017 - 2018**
  Courses: Statistical Learning, Information Engineering, Control Systems, Machine Vision & Robotics
- **National University of Singapore** — Singapore
  Bachelors in Electrical Engineering | First Class Honors — **2015 - 2019**
  Texas Instruments Book Prize Award | Top student in Digital Signal Processing and System
  United Engineers Book Prize Award | Top student in Industrial Control System

First Author Publication List

- **ECCV 2024**: 3iGS - Factorised Tensorial Illumination for 3D Gaussian Splatting
- **CVPR 2023**: ABLE-NeRF - Attention Based Rendering with Learnable Embeddings for Neural Radiance Fields
- **IROS 2022**: MPT-Net - Mask Point Transformer Network for Large Scale Point Cloud Semantic Segmentation

Experience

- **NTU S-Lab for Advanced Intelligence** — Singapore
  Machine Learning Researcher | Neural Rendering, Real-Time 3D Graphics — **2022 – 2024**
  * Developed learned reflectance parameterisations to model non-linear radiance behavior in 3D Gaussian splatting, improving approximation accuracy under high-frequency lighting conditions.
  * Optimised structured tensor decompositions to model complex scene illumination, enabling accurate real-time rendering through efficient low-rank approximations.
  * Proposed transformer-based inverse rendering models that embed physics priors into the attention mechanism, achieving state-of-the-art results on challenging lighting and geometry reconstruction tasks.
  * Experimented with LLMs and VLMs to align natural language inputs with scene-editing objectives.
- **SenseTime Research** — Singapore
  Algorithm Researcher | Point Cloud Segmentation & 3D Scene Understanding — **2019 – 2022**
  * Built a compute-efficient cross-attention transformer for 3D point cloud segmentation, optimising memory and inference throughput under GPU constraints.
  * Designed a masked token attention mechanism to reduce transformer complexity from quadratic to linear-time class-level decoding, enabling global feature learning across >100k-point input data.
  * Developed parallelized training pipelines across >100 GPUs, reducing model training time by 40% through I/O and memory bottleneck optimization.
- **ST Electronics** — Singapore
  AI Research Intern | Signal Processing & Drone Detection via Deep Learning — **2017 – 2018**
  * Developed patented deep learning method for spectrum-based drone detection; led full pipeline from signal collection to feature engineering.
  * Deployed real-time CUDA-based FFT algorithms, enhancing air defense system performance.
- **University of Oxford, Oxford Photonics Group** — Oxford, U.K.
  Student Researcher | Optical Wireless Communication & Tracking — **2017 – 2018**
  * Built high-speed optical communication links tailored for VR applications.
  * Designed cost-effective optical tracking systems, reducing costs by 90% compared to traditional methods.

Technical Proficiencies

- **Languages**: Python (proficient); C, CUDA, Verilog, Assembly (basic)
- **Platforms**: NVIDIA GPU clusters (HPC), Linux, Xilinx FPGA, HFSS, Arduino
- **ML Frameworks**: PyTorch, TensorFlow, NumPy, pandas, SciPy, scikit-learn, Matplotlib, OpenCV

Honors, Awards, and Competition Ranking

- **NTU - SenseTime Talent Programme**: Full scholarship for Ph.D Candidature and Monthly Stipend of ∼US$4,000
- **Texas Instruments Book Prize**: Top Student in NUS ECE for Digital Signal Processing and System.
- **United Engineers - Faculty of Engineering Annual Book Prize**: Top Student in NUS ECE for Industrial Control System.
- **LBC Family Engineering Scholarship**: Awarded to top 0.33% Engineering Students to dual matriculate in Oxford University.
- **WorldQuant Brain/ Quantitative Researcher**: GOLD Certificate
- **Worldwide 11^{th} Ranking in SemanticKITTI LiDAR Semantic Segmentation Competition, 2021**: Solo Participant