# Jianteng Chen

## Personal Data

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| **Name:** | Jianteng Chen  (陈建腾) |
| **Place and Date of Birth:** | Beijing, China \| 12 July 2003 |
| **Address:** | No 8 and 9 Yards, Liangxiang East Road, Fangshan District, Beijing |
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| **GitHub:** | https://github.com/JiantengChen |

## Research Experience

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|---|:---|
| since 04/2023 | Research Intern at Institute for AI Industry Research (AIR), Tsinghua University, supervised by Prof. Hao Zhao, Tsinghua University |
| since 04/2024 | Research Intern at Great Bay University, supervised by Prof. Guangcong Wang |

## Scientific Education

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|---|:---|
| 08/2024-12/2024 | Exchange Student, in Computor Science. <br> The Hong Kong University of Science and Technology |
| 09/2021–06/2025 | Bachelor of Engineering, in Cyberspace of Science and Technology. <br> Beijing Institute of Technology (BIT), China <br> GPA: 3.2/4.0 |

## Selected Publications

**Conference**

[1] J. Liu, W. Hu, Z. Yang, J. Chen, G. Wang, *et al.*, "Rip-nerf: Anti-aliasing radiance fields with ripmap-encoded platonic solids," *SIGGRAPH*, Apr. 2024. arXiv: 2405.02386 [cs].

[2] Z. Wu, T. Liu, L. Luo, Z. Zhong, J. Chen, *et al.*, "MARS: An Instance-aware, Modular and Realistic Simulator for Autonomous Driving," *CAAI International Conference on Artificial Intelligence (CICAI)*, Jul. 2023, Best Paper Runner-up Award. arXiv: 2307.15058 [cs].

**In Proceedings**

[3] J. Chen, Y. Huang, S. Xie, J. Liu, J. Zhao, *et al.*, "Bouncing into chaos: 4d global reflectance modelling for decomposed driving scenes," in *ECCV*, 2024.

## Projects

## 1    NeRF-based Simulator for Complex Dynamic Outdoor Driving Scene

- Proposed a state-of-the-art solution for reconstructing complex dynamic outdoor driving scenes using compositional neural radiance fields.

- The **first** open-source NeRF-based Simulator for Outdoor Driving Scene.

- Implemented an agile code framework that built upon NeRFStudio as tech leader.

- Project Repository: https://github.com/open-air-sun/mars. The repository is under long-term maintenance and has currently gained 636 stars.

- Published a conference paper in CICAI 2023, we delivered an oral presentation and got the Best Paper Runner-up Award.

- Follow-up work includes using instance modules to represent the foreground objects for possible optimization for bounding boxes, supporting other datasets, etc.

## 2    Anti-aliasing NeRF with ripmap-encoded platonic solids

- Propose a novel 3D space factorization method, Platonic Solid Projection to represent 3D scene via the unparalleled faces of a Platonic Solid.

- Represent the faces of platonic solid by Ripmap Encoding to enable anisotropic area-sampling.

- Achieve higher PSNR than Zip-NeRF while maintaining efficient reconstruction on both the Blender and real-world captured dataset. Also enables a flexible trade-off between rendering quality and efficiency.

## 3    Decoupling Reflectance Modeling in Dynamic Scenes with Neural Radiance Fields

- Introduces a novel method for modeling reflectance in dynamic decomposed scenes using a second pass model.

- Significantly improves the reconstruction of mirror surfaces and handles reflected light rays, leading to clear performance advantages over existing methods.

- Achieves around a 3dB PSNR improvement over the baseline method MARS and demonstrates successful reflectance modeling in dynamic decomposed radiance fields.

## 4    Three Dimensional Lidar Scene Simulator

- Develop a Lidar-based autonomous driving scene simulator utilizing digital delay devices and an array of laser light sources to generate laser delay signals, combined with a Spatial Light Modulator (SLM) for precise control of both temporal and spatial information.

- Use SLM to allocate laser signals to different time zones, create temporal information, and control the spatial position and intensity of the laser.

**5     Mininal Version of Tiktok**

- Based on Gin and Gorm, using MySQL to realize the database

- Using OSS for video storage and cover extraction

- Realized the basic API and interactive API(such as video streaming API, login API, comment API, etc)

- Project Repository: https://github.com/JiantengChen/minimal_version_tiktok

**6     A automatic pathfinding snake game based on pygame and BFS**

- Using optimized Greedy Algorithms to achieve automatic pathfinding

- Search the shortest road with BFS

- Project Repository: https://github.com/JiantengChen/python_SnakeGame

## HONORS & AWARDS

- **Second Prize** of The 10th National Undergraduate Optoelectronics Design Competition in North China                                                                                        10/2022

- **Champion** of The 3rd GBA Robotics Competition and the 10th Asian-Pacific Championship trails                                                                                        08/2019

- **Gold Award** of VEX Robotics World Championship                                                04/2016

- **First Prize** of the 15th China Youth Robotics Competition                                 07/2015

- **Gold Award** in Asia Pacific Robotics Championship                                         12/2014

- **First Prize** of the Asia Pacific Robotics Championship China Regional Qualifiers 08/2014

## EXTRACURRICULAR ACTIVITIES

- MANAGER, School Coffee House                                                               03/2022-now

- TEAM MENBER, Basketball Team

## SKILLS & INTERESTS

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| LANGUAGES: | Chinese (native), English (fluent) |
| PROGRAMMING LANGUAGES: | Python, Go, C/C++, Javascript |
| OPERATING SYSTEMS: | Linux, Windows |
| MACHINE LEARNING TOOLCHAIN: | Markdown, LaTeX, NeRFStudio, PyTorch |
| HOBBIES: | Coffee, Basketball |