Yuantao Chen

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EDUCATION

Xi'an University of Architecture and Technology (XAUAT) **Sep 2020-Jul 2024**

Degree: Bachelor of Science (Exp. Jul 2024), Major: Computer Science and Technology, GPA: 87.3/100

Awards: 2022 National Scholarship(Top 0.2% national-wide), The First Prize Scholarship × 2

Relevant Coursework: Advanced Mathematics (92), Programming Fundamentals (99), Algorithm design and analysis (95), Software Development with C++ (94), Concurrent Programming(92).

PUBLICATIONS

Zirui Wu*, **Yuantao Chen***, Runyi Yang, Zhenxin Zhu, Chao Hou, Yongliang Shi†, Hao Zhao, Guyue Zhou. AsyncNeRF: Learning Large-scale Radiance Fields from Asynchronous RGB-D Sequences with Time-Pose Function. (https://arxiv.org/abs/2211.07459. Nov 2022).

Zhenxin Zhu*, **Yuantao Chen***, Zirui Wu, Chao Hou, Yongliang Shi†, Chuxuan Li, Pengfei Li, Hao Zhao, Guyue Zhou. LATITUDE: Robotic Global Localization with Truncated Dynamic Low-pass Filter in City-scale NeRF. International Conference on Robotics and Automation 2023 (https://arxiv.org/abs/2209.08498).

**Equal contribution, †Corresponding author*

RESEARCH EXPERIENCE

DISCOVER Lab, Institute for AI Industry Research, Tsinghua University **Beijing, China**

Research Intern, Advised by Prof. Guyue Zhou *Aug 2022-Present*

- **Using Visual Prompt to improve the behavior of multi-scene pose regressor**
  - Using technologies of visual prompt tunning and sparse visual prompt to improve the behavior of multi-scene transformer.
  - Still working on the system design till now.
- **4D NeRF simulator with editable cars and digital person.**
  - Engaged in the system design and focused on large-scale scene representation technologies.
- **Learning Large-scale Neural Implicit Fields from asynchronous RGB-D Sequence**
  - Made an Asynchronous Urban Scene dataset composed of 18 trajectories on 6 realistic scenes using AirSim and Unreal Enigen4.
  - Engaged in the system design, helped tackle several technical problems in pose optimization, and finished the main experiments of the time-pose function.
  - As the co-first author, helped finish the paper writing and submit it to a CVPR 2023.
- **Neural Implicit City-scale Scene Mapping and Localization**
  - Proposed the initial idea of pose-regressor using Mega-NeRF and implemented it, which is the first part of the two-stage location mechanism.
  - Made a virtual-scene dataset on 2 realistic scenes using AirSim and Unreal Enigen4.
  - As the co-first author, completed a conference paper accepted by ICRA 2023.

DISCOVER Lab, Institute for AI Industry Research, Tsinghua University **Beijing, China**

Summer program, Advised by Prof. Guyue Zhou *May 2022-Aug 2022*

- **Multi-scene Camera Re-localization**
  - Implemented a simple bundle adjustment system with C++ to optimize the output of the pose-regressor at runtime.
  - Engaged in the design of camera re-localization regressor with transformer.

Xi'an University of Architecture and Technology **Xi'an, China**

Programs of School of information and control engineering *Jan 2021-Apr 2022*

- **SLAM and robot vision system design based on Standford Pupper V1**
  - Designed and implemented a SLAM system based on ROS and cartographer with a 2D Lidar on Standford Pupper V1 (a small robot dog with Raspberry Pi4 computing board).
  - Implemented a lot of computer vision algorithms including gesture interaction, fire monitoring, face-mask detection, and helmet detection with YOLOV5 and MediaPipe.
  - Helped design a PCB board for Raspberry Pi4 computing board to carry the high current of the steering gear.
  - Project repository: https://github.com/Tao-11-chen/pupper_ros.git
- **Development of Fluid Mechanics Teaching Website**
  - Developed the first real-time Computational Fluid Dynamics (CFD) simulation website using the lattice Boltzmann method (LBM) algorithm and ASP.NET framework.
  - Involved in the design of a high-speed parallel computing system of CFD simulation.
  - The site has been available now and is already used for teaching on my campus.
- **Non-destructive BCI System for music therapy based on Machine Learning**
  - Preprocessed the EEG data and used LSTM to analyze the user's emotions.
  - Designed a music generation network based on the output of LSTM to create music according to the user's emotions.
  - Won many business competition awards at school and produced a utility model patent.

HONORS & AWARDS

- 2022 **National** Scholarship Dec 2022
- **Second Prize** in the final of the 2022 China Undergraduate Computer Design Competition Jul 2022
- **Second Prize** in the RoboMaster University Sim2Real Challenge at ICRA 2022 May 2022
- **Second Prize** in National Undergraduate Mathematical Contest in Modeling(Shan'xi site) Dec 2021
- **First Prize** in "SIEMENS Cup" China intelligent manufacturing challenge (Northwest Regional) Jul 2021
- **Second Prize** in 2021 National English Competition for college students May 2021
- **Second Prize** in 2021 China Undergraduate Computer Design Competition(Northwest Regional) May 2021

ACTIVITIES & STUDENT ORGANIZATIONS

- 18-day volunteering in the battle of epidemic prevention and control Feb 2021
- The chief leader of the innovative and entrepreneurial department in the students' union Sep 2021-Sep 2022
- Delivered more than 10 speeches about AI, research methods, and study methods on campus Jan 2021-Present

SKILLS & LANGUAGE

Programming language: C/C++, Python, Java, MATLAB, Web (C#+JavaScript+html5)

Languages: Chinese (native), English (fluent)

Operating system: Linux, Windows

Software: PyTorch, Unreal Engine 4/5, ROS1, Isaac-sim, MeshLab

Hobbies: basketball, table tennis