Yuke Li 李宇科

Date of Birth: May 2002
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Education

ShanghaiTech University (ShanghaiTech), Double First-Class Initiative University , School of Information Science and Technology, Electronic Information, Master , CS Ranking 12 Sept. 2024 - Present

China University of Petroleum (UPC), 211 Project, Double First-Class Initiative University , College of Science, Data Science, Bachelor Sept. 2020 - Jun. 2024

Core Competencies: Python, PyTorch, PyTorch C++/CUDA Extension, CUDA, Linux, CET6

Research Experience

†Equal Contribution * Corresponding author

Duplex-GS: Proxy-Guided Weighted Blending for Real-Time Order-Independent Gaussian Splatting

- Weihang Liu, Yuke Li, Yuxuan Li, Jingyi Yu, Xin Lou*
- Duplex-GS is a novel 3DGS rendering framework. It not only possesses the excellent Novel View Synthesis (NVS) performance and fast convergence capabilities of Neural GS but also retains the explicit features and editability of traditional 3DGS. Achieves state-of-the-art (SOTA) rendering quality and speed on multiple public datasets.
- First reproduced the non-open-source baseline (Sort-free Gaussian Splatting via Weighted Sum Rendering) [paper][code]. Introduced the concept of a 'Cell', a variation of the 'Anchor' used in Scaffold-GS and Octree-GS. We strictly constrain Gaussians (GS) within a Cell to remain inside it, applying corrections based on the Cell. We also modified the rendering approach to a per-Cell Alpha blending method, enabling sort-free rendering within each Cell. Efficiently implemented the differentiable rendering process for Cells using PyTorch C++ Extension (CUDA).

CityGo: Lightweight Urban Modeling and Rendering with Proxy Buildings and Residual Gaussians [project page]

- Weihang Liu†, Yuhui Zhong†, Yuke Li†, Xi Chen, Jiadi Cui, Honglong Zhang, Lan Xu, Xin Lou, Yujiao Shi, Jingyi Yu, Yingliang Zhang* Co-first author
- CityGo is a framework for lightweight, real-time rendering of large-scale urban scenes. It combines the advantages of 3D Gaussian Splatting (3DGS) and Mesh representations to achieve efficient training and rendering.
- We implemented a novel hybrid rendering mode integrating 3DGS and traditional Mesh, along with a hybrid differentiable rendering and optimization strategy. Deployed on NVIDIA Jetson edge computing devices, achieving a five-fold improvement in FPS compared to standard 3DGS.

CoARF++: Content-Aware Radiance Field Aligning Model Complexity with Scene Intricacy [IEEE TVCG]

- Weihang Liu, Xue Xian Zheng, Yuke Li, Tareq Y. Al-Naffouri, Jingyi Yu, Xin Lou*
- CoARF++ adaptively adjusts model complexity to match scene intricacy, optimizing the performance and deployment efficiency of NeRF models.
- This work was accepted by IEEE Transactions on Visualization and Computer Graphics (TVCG), a top-tier journal in computer graphics.

Practical Experience

Tsinghua University - Ruihua Joint Research Center for Underground Space Intelligent Construction, Intern, Supervisor: Zhaoliang Li [link] Jul. 2023 - Sep. 2023

- Worked in the **Transparent Addressing R&D Department**, contributing to the development of the digital twin "Mine Personnel Management Integrated System Platform". Studied Marching Cubes, Tetrahedra, and related 3D reconstruction algorithms.
- Completed data cleaning and warehousing tasks. Processed and stored temperature, humidity, pressure, and other sensor data collected from underground spaces. Performed preprocessing operations including outlier detection, missing value imputation, and normalization.

Jiangsu Yuyue Medical Equipment & Supply Co., Ltd. (Fortune China 500) , Intern Mar. 2023 - May. 2023

- Worked in the **Network and Information Department**. Completed projects including **RPA (Robotic Process Automation) for Office Automation** and **Web Crawler** projects.
- Solely designed and developed information collection and processing software for multiple e-commerce platforms (Taobao, Meituan, Pinduoduo, JD.com) and the national 12315 platform, based on **Selenium** and **Aibote**. Developed VBA-based Excel scripts for one-click text and table organization, significantly improving the company's efficiency in information collection, processing, and submission.

Shandong University ”Navigator Program” AI Micro-major Project Mar. 2022 - Jul. 2022

Awards & Honors

ShanghaiTech University, Graduate Academic Scholarship 2024