Runmao Yao

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Education

Tsinghua University, B.Eng. in Software Engineering — Sept 2021 – Jun 2025

- GPA: 3.84/4.00 (93.14/100)
  - Freshman: 3.55/4.00 Sophomore: 3.90/4.00
  - Junior: 3.98/4.00 Senior: 4.00/4.00

Publications

[1] AnchoredDream: Zero-Shot 360° Indoor Scene Synthesis from a Single View via Geometric Grounding (OpenReview) — Submitted to NeurIPS 2025
Runmao Yao, Junsheng Zhou, Yu-Shen Liu

[2] AirRoom: Objects Matter in Room Reidentification (arXiv) — CVPR 2025
Runmao Yao, Yi Du, Zhuoqun Chen, Haoze Zheng, Chen Wang

[3] SuperPC: A Single Diffusion Model for Point Cloud Completion, Upsampling, Denoising, and Colorization (arXiv) — CVPR 2025
Yi Du, Zhipeng Zhao, Shaoshu Su, Sharath Golluri, Haoze Zheng, ***Runmao Yao***, Chen Wang

Research Experiences

Single-View Indoor Scene Synthesis (3D Computer Vision) — *Tsinghua University*
Supervisor: Prof. Yu-Shen Liu — *Dec 2024 – Jun 2025*

- **Task:** Generate a complete 360° indoor scene from a single-view input image.
- Proposed AnchoredDream, a novel pipeline that grounds scene appearance generation on high-quality geometry for single-view indoor scene synthesis with full 360° capability.
- Introduced an appearance-geometry mutual boosting mechanism and designed a novel Grouting Block to seamlessly blend the boundary between the input view and the synthesized scene, enhancing the consistency between scene appearances and geometry.
- Extensive experiments show that AnchoredDream, without any training or fine-tuning, outperforms existing methods in both appearance consistency and geometric plausibility.

Room Reidentification (Computer Vision for Robotics) — *University at Buffalo*
Supervisor: Prof. Chen Wang — *Jul 2024 – Feb 2025*

- **Task:** Retrieve the most similar room image from a large database given a query room image.
- Curated four comprehensive room reidentification datasets (MPReID, HMReID, GibsonReID, and ReplicaReID) with over 35000 images across diverse environments.
- Proposed AirRoom, an object-aware, coarse-to-fine pipeline integrating multi-level object information, from global context to object patches, segmentation, and keypoints.
- Extensive experiments demonstrated that AirRoom outperformed state-of-the-art models by 6% to 80% across nearly all evaluation metrics and exhibited robust performance under diverse viewpoint variations.

Skill Discovery (Reinforcement Learning) — *Tsinghua University*
Supervisor: Prof. Yi Wu — *Mar 2024 – Aug 2024*

- **Task:** Enable agents to learn diverse skills, where each skill corresponds to a distinct behavior.
- Reproduced key results from previous works, including LSD, CSD, and METRA.
- Proposed a novel approach by designing rewards based on trajectory segments rather than individual states.
- Developed an on-the-fly trajectory predictor and evaluator leveraging FLD.

Awards and Honors

Second Prize Scholarship for Incoming Students, Tsinghua University — *Dec 2021*
Third Prize in the Software Competition, Tsinghua University — *Jan 2022, Jun 2023*
Outstanding Admission Volunteer, Tsinghua University — *Jul 2022*
Sports Excellence Award, Tsinghua University — *Sep 2022*
Comprehensive Excellence Award, Tsinghua University (**Top 5%**) — *Sep 2023, Sep 2024*

Skills

Programming: C, C++, Python, Java, HTML, CSS, JavaScript
Techniques: Pytorch, Mujoco, Docker, Git
Languages: English(Proficient), Chinese(Native)