Chenjian Gao

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EDUCATION

Beihang University — Beijing, China
Master Student in Software Engineering — *Sept. 2021 – Jun. 2024 (expected)*
- Supervisor: Prof. Qian Yu

Beihang University — Beijing, China
Bachelor of Engineering, Software Engineering — *Sept. 2017 – Jun. 2021*
- GPA: 89.79/100.00, Rank: 3/169

SELECTED PAPERS

1. GenesisTex: Adapting Image Denoising Diffusion to Texture Space [arXiv]
   Chenjian Gao*, Boyan Jiang, Xinghui Li, Yingpeng Zhang*, Qian Yu
   IEEE Conference on Computer Vision and Pattern Recognition (**CVPR**), 2024

2. 3D Reconstruction from a Single Sketch via View-dependent Depth Sampling
   Chenjian Gao, Xilin Wang, Qian Yu, Lu Sheng, Jing Zhang, Xiaoguang Han, Yi-Zhe Song, Dong Xu
   (**T-PAMI submission**), 2023

3. SketchSampler: Sketch-Based 3D Reconstruction via View-Dependent Depth Sampling [PDF][Code]
   Chenjian Gao, Qian Yu, Lu Sheng, Yi-Zhe Song, Dong Xu
   European Conference on Computer Vision (**ECCV**), 2022

4. Flexible Neural Image Compression via Code Editing [PDF]
   Chenjian Gao*, Tongda Xu*, Dailan He, Yan Wang, Hongwei Qin
   Advances in Neural Information Processing Systems (**NeurIPS**), 2022

RESEARCH EXPERIENCE

Visual Computing Group, Beihang University
Master Student (Advisor: Prof. Qian Yu) — *Sept. 2020 – Jun. 2024*
- **3D Point Cloud Reconstruction from a single sketch**: Propose an approach to reconstruct point cloud from a single sketch, utilizing a novel representation 'Density Map'. Published in ECCV 2022.
- **3D Mesh Reconstruction from a single sketch**: Design a network to predict normal and offset for each 3D point utilizing sketch information, then a 3D mesh is recovered using Poisson surface reconstrction.

ISP & Codec, Sensetime Research
Research Intern (Advisor: MSc. Tongda Xu) — *Nov. 2020 – Jun. 2022*
- **Semi-amortized Inference for Variable Bitrate Image Compression**: Propose an approach to achieve variable bitrate model and perception-distortion trade-off in neural image compression using semi-amortized variational inference. Published in NeurIPS 2022
- **Compressed Domain Contour Flow for Fast Video Salient Detection**: Propose a novel contour-flow approach for P/B frame salient object detection by warping the I frame contours with motion vectors encoded in bitstream. The boundary problem of feature-flow approaches is overcame by warping contours directly. Achieve 400% speed up with 3% f-measure loss compared with SOTA.

HONORS & AWARDS

2021, Beihang Outstanding Undergraduate Graduate. To outstanding undergraduate graduates.
2020, National Scholarship. To top 0.2% students in China by the central goverment.
2018, First Prize in the Tenth National College Mathematics Competition (Non-Mathematics Category). Organized by the Chinese Mathematical Society.

Selected Projects

Product live stream recap editing tool   Mar. 2024 – Apr. 2024
Internship project @ ByteDance   *Python*
- Design a system to extract segments related to product explanations from TikTok live stream to serve as supplementary videos on the product detail pages.

AI texture tool for the game engine   Mar. 2023 – Feb. 2024
Internship project @ Tencent Games   *Python, Taichi*
- Develop a framework from scratch for generating textures for texture-less models based on textual semantics.
- Design multiple-viewpoint consistency mechanisms based on the pre-trained Stable Diffusion model.
- The generated texture map has a resolution of up to 2K, and generating a single texture map on an NVIDIA A10 GPU only takes 3 minutes.

Intelligent LOD system   Dec. 2022 – Mar. 2023
Internship project @ Tencent Games   *Python, Pytorch3D*
- Participate in the development of a system for intelligent generation of Level of Detail (LOD) models.
- Develop an algorithm based on point clouds to determine the removable nature of small structures, which can remove small structures before applying the decimation algorithm.

Patents

[**CN115330938A**] Density Map Sampling for 3D Point Clouds Generation from a Single Sketch. Qian Yu, **Chenjian Gao**. (2022)
[**CN113660531A**] Multi-scale Shifted Statistics for Adaptive Quantization. Tongda Xu, **Chenjian Gao**, Yan Wang, Tao Yuan, Hongwei Qin. (2021)
[**CN113612999A**] Real-time Saliency Detection for Adaptive Quantization. Tongda Xu, **Chenjian Gao**, Yan Wang, Tao Yuan, Hongwei Qin. (2021)

Technical Skills

Programming Languages: Python, C/C++, CUDA
Tools: Git, VS Code, Pycharm, Blender, MeshLab
Frameworks: Pytorch, Taichi, Nvdiffrast