Caoliwen Wang

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Educational Background

University of British Columbia Jul 2025 - Current

Ph.D. in Computer Science

Advisor: Prof. Peter Yichen Chen

University of Science and Technology of China Sep 2021 - Jun 2025

B.S. in Computational Mathematics

Publications

Shape from Semantics: 3D Shape Generation from Multi-View Semantics

Liangchen Li, **Caoliwen Wang**, Yuqi Zhou, Bailin Deng and Juyong Zhang. arXiv preprint, arXiv:2502.00360, 2025.

DOI: 10.48550/arXiv.2502.00360.

Project Page: https://shapefromsemantics.github.io/

Under Peer Review

Neural Shadow Art

Caoliwen Wang and Bailin Deng. arXiv preprint, arXiv:2411.19161, 2024.

DOI: 10.48550/arXiv.2411.19161.

Under Peer Review

Research Experience

Shape from Semantics: 3D Shape Reconstruction from Multi-View Semantics Nov 2024 - Current

Advisor: Senior Lecturer Bailin Deng, School of Computer Science and Informatics, Cardiff University;
Prof. Juyong Zhang, Geometry Computing Lab, University of Science and Technology of China.

· Propose a novel inverse modeling problem related to 3D generation based on deeper reflections on my previous work, neural shadow art.

· Establish the full-process pipeline and finalize the construction and extension of the coarse stage.

· Conduct extensive sample testing, 3D print the results, and draft portions of the paper.

USTCCG: A Node-Based Geometry Processing Library Oct 2024 - Jun 2025

Advisor: Prof. Ligang Liu, Geometry Computing Lab, University of Science and Technology of China.

· Develop a foundational library that incorporates geometry processing algorithms while allowing node-based programming and facilitating differentiable workflows to support learning-based methods.

· Implement code related to mesh deformation based on barycentric coordinates and explore new methods for the topic of barycentric coordinates.

· Program operations that enhance the engineering aspects of this work.

Neural Shadow Art Mar 2024 - Nov 2024

Advisor: Senior Lecturer Bailin Deng, School of Computer Science and Informatics, Cardiff University;
Prof. Juyong Zhang, Geometry Computing Lab, University of Science and Technology of China.

· Conduct a survey and draw inspiration from classic papers on 3D reconstructions, such as Neus, NeuralUDF, and Occupancy Networks.

· Design and implement the entire pipeline, extend previous work on Shadow Art by using implicit representations of 3D geometry, combining traditional geometry processing with learning methods.

· Point out angular adjustments, optimize volume and geometric properties, improve model accuracy and robustness.

Skills

Programming: C, C++, C#, Python, Pytorch, Matlab, Mathematica

Tools: Meshlab, Blender, Github, LaTeX

Languages: Chinese, English

Teaching Experience

Teaching Assistant of Course "Mathematical Modeling" Mar 2025 - Jun 2025

Teaching Assistant of Course "Numerical Algebra" Sep 2024 - Jan 2025

Teaching Assistant of Course "Mathematical Analysis A2" Mar 2024 - Jul 2024

Teaching Assistant of Course "Introduction to Differential Equations" Sep 2023 - Jan 2024

Scholarships and Awards

University and Provincial Outstanding Graduate Award 2025 (USTC)

China Petroleum Scholarship 2024 (USTC)

For top five students in the comprehensive evaluation from the School of Mathematical Sciences USTC.

China Petroleum Scholarship 2023 (USTC)

For top three students in the comprehensive evaluation from the School of Mathematical Sciences USTC.

Endeavour Scholarship 2022 (USTC)

For students across USTC who have demonstrated outstanding progress during the current semester.

Volunteering

Conference Volunteer Oct 2024

Chinagraph, Pacific Graphics 2024 | *Huangshan, Anhui, China*