Zhenyuan (Desmond) Liu

PhD Student, ETH Zurich, Switzerland
Advisor: Prof. Bernd Bickel

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Publications

Liu Zhenyuan, Yu Guo, Xinyuan Li, Bernd Bickel, Ran Zhang: "BiGS: Bidirectional Gaussian Primitives for Relightable 3D Gaussian Splatting", *3D Vision 2025 (to appear)*. doi: 10.48550/arXiv.2408.13370

Liu Zhenyuan, Michal Piovarči, Christian Hafner, Raphaël Charrondière, Bernd Bickel: "Directionality-Aware Design of Embroidery Patterns", *Computer Graphics Forum (Eurographics 2023)*. doi: 10.1111/cgf.14770

Zhenyuan Liu, Jingyu Hu, Hao Xu, Peng Song, Ran Zhang, Bernd Bickel, Chi-Wing Fu: "Worst-Case Rigidity Analysis and Optimization for Assemblies with Mechanical Joints", *Computer Graphics Forum (Eurographics 2022)*. doi: 10.1111/cgf.14490

Education

ETH Zurich, Switzerland   2024.02 – Present
PhD Student in Department of Architecture

EPFL, Switzerland   2022.09 – 2023.09
PhD Student in Computer and Communication Sciences

The Chinese University of Hong Kong (CUHK)   2017.09 – 2021.07
BSc. in Computer Science; First Class Honors; Major GPA: 3.95/4.00
Exchange Program at *University of Toronto* (2020.01 – 2020.04)

Research Experience

Research Intern: Relightable 3D Gaussian Splatting   2023.09 – 2024.02
- Advisor: Ran Zhang, Tencent North America
- Developed a novel 3D representation for relightable rendering with Gaussian splatting
- Participated in internal projects on video generation using diffusion models
- Paper accepted to **3D Vision 2025**, Singapore

Research Intern: Computational Embroidery   2021.09 – 2022.08
- Advisor: Prof. Bernd Bickel, Institute of Science and Technology Austria (ISTA)
- Recreated a chromatic image in the real world using a programmable sewing machine
- Presented the results as a technical paper at **Eurographics 2023**, Saarbrücken, Germany

Bachelor Thesis: Rigidity Analysis for Assembly Structures   2020.07 – 2021.09
- Advisor: Prof. Chi-Wing Fu, CUHK and Prof. Bernd Bickel, ISTA
- Proposed a metric for the structural rigidity of assemblies and devised algorithms to improve the rigidity
- Presented the results as a technical paper at **Eurographics 2022**, Reims, France

Awards and Honors

EPFL EDIC PhD Student Fellowship   2022
Arthur and Louise May Memorial Scholarship   2020
Professor Charles K. Kao Research Exchange Scholarship   2020

Work Experience

Backend Development Intern, Tencent, China   2021.01 – 2021.06
- Maintained the backend billing platform that processes millions of API invocations for the cloud services
- Developed using Golang the backend of an internal data platform service

Miscellaneous

- Served as Teaching Assistant for *Introduction to Computer Graphics Spring 2023* at EPFL
- Prepared teaching material for *Materials for Architectural Rendering Autumn 2024* at ETH Zurich
- Served as Reviewer for *ACM SIGGRAPH, ACM Symposium on Computational Fabrication*