

Zhenyuan (Desmond) Liu

PhD Student, ETH Zurich, Switzerland

Advisor: Prof. Bernd Bickel; Expected Graduation Date: 02/2028

Research Interests: inverse rendering, thermal simulation, and digital fabrication

👤 <https://desmondly.me>

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Publications

Liu Zhenyuan, Bharath Seshadri, George Kopanas, Bernd Bickel: “Inverse Radiative Transport for Infrared Scenes with Gaussian Primitives”, *SIGGRAPH Asia 2025 Conference Papers*. doi: 10.1145/3757377.3763938

Liu Zhenyuan, Yu Guo, Xinyuan Li, Bernd Bickel, Ran Zhang: “BiGS: Bidirectional Gaussian Primitives for Relightable 3D Gaussian Splatting”, *3D Vision 2025*. doi: 10.1109/3dv66043.2025.00099

Liu Zhenyuan, Michal Piovarčí, 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; Supervisor: Prof. Bernd Bickel.

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
- Presented the results as a paper at **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

Software Engineer 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

Awards and Honors

EPFL EDIC PhD Student Fellowship

2022

Arthur and Louise May Memorial Scholarship

2020

Professor Charles K. Kao Research Exchange Scholarship

2020

Miscellaneous

- Served as Teaching Assistant and prepared materials for *Introduction to Computer Graphics Spring 2023* at EPFL; *Materials for Architectural Rendering Autumn 2024* and *Computational Design III* at ETH Zurich
- Served as Reviewer for *ACM SIGGRAPH North America*, *ACM SIGGRAPH Asia*, *ACM Symposium on Computational Fabrication*
- Coding skills: Python (PyTorch, NumPy), C++ (Eigen)