Hsueh-Ti Derek Liu

Curriculum Vitæ

http://www.dgp.toronto.edu/~hsuehtil/
606-5883 Barker Ave., Burnaby, BC V5H 0G4, Canada
hsuehtil@gmail.com

Research/Academic Positions

Research Scientist 2022 - Present
Roblox Inc., Vancouver, Canada

Adjunct Professor 2023 - Present
The University of British Columbia, Vancouver, Canada

Education

University of Toronto 2017 - 2022
PhD, Computer Science
Advisor: Alec Jacobson

Carnegie Mellon University 2015 - 2017
MS, Mechanical Engineering
Advisors: Levent Burak Kara, Keenan Crane

National Taiwan University 2010 - 2014
BS, Engineering Science and Ocean Engineering

Publications

1. Constructive Solid Geometry on Neural Signed Distance Fields 2023
   Zoë Marschner, Silvia Sellán, **Hsueh-Ti Derek Liu**, Alec Jacobson
   ACM SIGGRAPH Asia

2. Differentiable Heightfield Path Tracing with Accelerated Discontinuities 2023
   Xiaochun Tong, **Hsueh-Ti Derek Liu**, Yotam Gingold, Alec Jacobson
   ACM SIGGRAPH North America

3. Surface Simplification using Intrinsic Error Metrics 2023
   Hsueh-Ti Derek Liu, Mark Gillespie, Benjamin Chislett, Nicholas Sharp, Alec Jacobson, Keenan Crane
   ACM SIGGRAPH North America

4. Learning Smooth Neural Functions via Lipschitz Regularization 2022
   Hsueh-Ti Derek Liu, Francis Williams, Alec Jacobson, Sanja Fidler, Or Litany
   ACM SIGGRAPH North America

5. Kubric: A scalable dataset generator 2022
   Klaus Greff, Francois Belletti, Lucas Beyer, Carl Doersch, Yilun Du, Daniel Duckworth, David J. Fleet, Dan Gnanapragasam, Florian Golemo, Charles Herrmann, Thomas Kipf, Abhijit Kundu, Dmitry Lagun, Issam Laradji, **Hsueh-Ti Derek Liu**, Henning Meyer, Yishu Miao, Derek Nowrouzezahrai, Cengiz Oztireli, Etienne Pot, Noha Radwan, Daniel Rebain, Sara Sabour, Mehdi S. M. Sajjadi, Matan Sela, Vincent Sitzmann, Austin Stone, Deqing Sun, Suhani Vora, Ziyu Wang, Tianhao Wu, Kwang Moo Yi,

Fangcheng Zhong, Andrea Tagliasacchi
CVPR

6. Surface Multigrid via Intrinsic Prolongation 2021
Hsueh-Ti Derek Liu, Jiayi Eris Zhang, Mirela Ben-Chen, Alec Jacobson
ACM SIGGRAPH North America

7. Normal-Driven Spherical Shape Analogies 2021
Hsueh-Ti Derek Liu, Alec Jacobson
Eurographics Symposium on Geometry Processing (SGP)

8. Chordal Decomposition for Spectral Coarsening 2020
Honglin Chen, **Hsueh-Ti Derek Liu**, Alec Jacobson, David I.W. Levin
ACM SIGGRAPH Asia

9. Neural Subdivision 2020
Hsueh-Ti Derek Liu, Vladimir G. Kim, Siddhartha Chaudhuri, Noam Aigerman, Alec Jacobson
ACM SIGGRAPH North America

10. Spectral Mesh Simplification 2020
Thibault Lescoat, **Hsueh-Ti Derek Liu**, Jean-Marc Thiery, Alec Jacobson, Tamy Boubekeur, Maks Ovsjanikov
Eurographics

11. Cubic Stylization 2019
Hsueh-Ti Derek Liu, Alec Jacobson
ACM SIGGRAPH Asia

12. Spectral Coarsening of Geometric Operators 2019
Hsueh-Ti Derek Liu, Alec Jacobson, Maks Ovsjanikov
ACM SIGGRAPH North America

13. Beyond Pixel Norm-Balls: Parametric Adversaries using an Analytically Differentiable Renderer 2019
Hsueh-Ti Derek Liu, Michael Tao, Chun-Liang Li, Derek Nowrouzezahrai, Alec Jacobson
ICLR

14. Paparazzi: Surface Editing by way of Multi-View Image Processing 2018
Hsueh-Ti Derek Liu, Michael Tao, Alec Jacobson
ACM SIGGRAPH Asia

15. A Dirac Operator for Extrinsic Shape Analysis 2017
Hsueh-Ti Derek Liu, Alec Jacobson, Keenan Crane
Eurographics Symposium on Geometry Processing (SGP)

Awards

Eurographics PhD Thesis Award	2022
The Alain Fournier Dissertation Award	2022
Robert E. Lansdale / Okino Computer Graphics Graduate Fellowship	2020, 2021
Adobe Research Fellowship	2020
Mary H. Beatty Fellowship	2019
Mitacs Globalink Research Award	2018

Conference Talks

1. ACM SIGGRAPH North America, Los Angeles, United States — August 2023
   Surface Simplification using Intrinsic Error Metrics
2. Graphics Interface, Victoria, Canada — June 2023
   Algorithms for Data-Driven Geometric Stylization & Acceleration
3. ACM SIGGRAPH North America, Vancouver, Canada — August 2022
   Learning Smooth Neural Functions via Lipschitz Regularization
4. ACM SIGGRAPH North America (Labs Demo), Vancouver, Canada — August 2022
   Learning Smooth Neural Functions via Lipschitz Regularization
5. ACM SIGGRAPH North America, Virtual — August 2021
   Surface Multigrid via Intrinsic Prolongation
6. Symposium on Geometry Processing, Virtual — July 2021
   Normal-Driven Spherical Shape Analogies
7. EUROGRAPHICS, Virtual — May 2021
   3D Modeling for Everyone
8. ACM SIGGRAPH North America, Virtual — August 2020
   Neural Subdivision
9. ACM SIGGRAPH Asia, Brisbane, Australia — November 2019
   Cubic Stylization
10. ACM SIGGRAPH North America, Los Angeles, United States — August 2019
    Spectral Coarsening of Geometric Operators
11. Graphics Interface, Kingston, Canada — May 2019
    Spectral Coarsening of Geometric Operators
12. International Conference on Learning Representation, New Orleans, United States — May 2019
    Beyond Pixel Norm-Balls: Parametric Adversaries using an Analytically Differentiable Renderer
13. ACM SIGGRAPH Asia, Tokyo, Japan — December 2018
    Paparazzi: Surface Editing by way of Multi-View Image Processing
14. ACM SIGGRAPH Asia (Doctoral Consortium), Tokyo, Japan — December 2018
    Operator-Preserving Algebraic Coarsening
15. Symposium on Geometry Processing, London, United Kingdom — July 2017
    A Dirac Operator for Extrinsic Shape Analysis

Research Experiences

1. *Consultant* — December 2021 - August 2022
   Urus Entertainment, Burbank, United States

2. *Research Intern* — July 2021 - September 2021
   NVIDIA AI, Toronto, Canada
   Mentor: Sanja Fidler

3. *Research Intern* — February 2021 - April 2021
   NVIDIA AI, Toronto, Canada
   Mentor: Sanja Fidler

4. *Research Intern* — June 2019 - August 2019
   Adobe Research, Seattle, United States
   Mentors: Noam Aigerman, Siddhartha Chaudhuri, Vova Kim

5. *Visiting Researcher* — June 2018 - January 2019
   École polytechnique, Palaiseau, France
   Mentor: Maks Ovsjanikov

Invited Talks

1. University of British Columbia — December 2023
   Introduction to Geometric Modeling

2. University of British Columbia — October 2023
   Level of Detail for Geometry Computation

3. International Conference on Machine Learning — July 2023
   Geometric Learning on Discrete Surface Meshes

4. Brown University — November 2022
   Generative Models for Stylized Geometry

5. Simon Fraser University — November 2022
   Generative Models for Stylized Geometry

6. Adobe Research — October 2022
   Learning Smooth Neural Functions via Lipschitz Regularization

7. Technion - Israel Institute of Technology — July 2022
   3D Content Creation Made Fast & Easy

8. Talking Papers Podcast — May 2022
   Learning Smooth Neural Functions via Lipschitz Regularization

9. Roblox — April 2022
   3D Content Creation Made Fast & Easy

10. McGill — March 2022
    3D Content Creation Made Fast & Easy

11. Amazon — March 2022
    3D Content Creation Made Fast & Easy

12. Toronto Geometry Colloquium — March 2022
    3D Content Creation Made Fast & Easy

13. Université de Montréal — February 2022
3D Content Creation Made Fast & Easy

14. Massachusetts Institute of Technology — May 2021
Towards Scalable Geometry Processing

15. Autodesk AI — March 2021
Generative Models for Stylized Geometry

16. NVIDIA AI, Toronto — October 2020
3D Modeling for Everyone

17. GAMES, China — September 2020
3D Modeling for Everyone

18. TOMOGRAPH, Waterloo, ON — December 2019
Neural Subdivision

19. Autodesk Research, Toronto, ON — November 2019
Cubic Stylization

20. Adobe Research, Seattle, WA — August 2019
Spectral Coarsening of Geometric Operator

21. University of Washington, Seattle, WA — July 2019
Spectral Coarsening of Geometric Operators

22. Fields Institute, Toronto, ON — May 2019
Paparazzi: Surface Editing by way of Multi-View Image Processing

23. Vector Institute, Toronto, ON — March 2019
Beyond Pixel Norm-Balls: Parametric Adversaries using an Analytically Differentiable Renderer

24. École Polytechnique, Palaiseau, France — October 2018
Paparazzi: Surface Editing by way of Multi-View Image Processing

25. Google — August 2018
A Differentiable Renderer for Image-Driven Shape Optimization

26. École Polytechnique, Palaiseau, France — July 2018
A Differentiable Renderer for Image-Driven Shape Optimization

27. University of Toronto, Toronto, ON — April 2017
From Intrinsic to Extrinsic Shape Analysis

Teaching

SIGGRAPH
Co-Lecturer : An Introduction to Deep Learning on Meshes — 2021
SIGGRAPH Asia
Co-Lecturer : An Introduction to Deep Learning on Meshes — 2021
Symposium on Geometry Processing

Co-Lecturer : An Introduction to Geometry Processing Programming in MATLAB with gptoolbox 2021
Summer Geometry Institute
Lecturer : Shape Deformation 2021, 2022
University of Toronto
Substitute Lecturer : CSC2520 Geometry Processing 2020
Substitute Lecturer : CSC2521 Seminar in Geometry and Animation 2019
Teaching Assistant : CSC2549 Physics-Based Animation 2019
Carnegie Mellon University
Teaching Assistant : 24-785 Engineering Optimization 2016

Professional Activities

Toronto Geometry Colloquium `https://toronto-geometry-colloquium.github.io`
Co-organizing a weekly webseries to promote young researchers and researchers from underrepresented communities.

Program Committees
ACM SIGGRAPH Asia, Eurographics, Pacific Graphics, Shape Modelling International, Graphics Interface

Reviewer
ACM SIGGRAPH North America, ACM SIGGRAPH Asia, ACM Symposium on User Interface Software and Technology, ACM Transactions on Graphics, Computer-Aided Design, Computer Animation and Virtual Worlds, Computer Graphics and Applications, Computer Graphics Forum, CVPR, Eurographics, Graphics Interface, IEEE Transactions on Visualization and Computer Graphics, Pacific Graphics, Shape Modelling International, International Conference on 3D Vision

Patents

- Decimating a Three-dimensional Mesh via Successive Self-parameterization 2020
- Subdividing a Three-dimensional Mesh Utilizing a Neural Network 2020