Chenxi Liu

Updated: June, 2025
Email: liuchenxi0921@gmail.com
Web: https://chenxil21.github.io/

Research Interests

My Ph.D. research bridged the gap between rough freehand line drawings and precise digital representations, and also addressed generating line drawings from 3D models. More recently, I have focused on generative image models and attribution, with an emphasis on creative technologies that assist artists. My work spans 2D/3D geometry, vector graphics, non-photorealistic rendering, and the analysis of LoRA models fine-tuned to mimic artistic styles. This research aligns with my broader goal of integrating technical advances into artistic processes to foster a collaborative relationship between technology and creativity.

Education

Sep 2016 – Jun 2023	**University of British Columbia** Ph.D. in Computer Graphics. Advised by Prof. Alla Sheffer.
Aug 2013 – Dec 2014	**Carnegie Mellon University** M.S. in Computer Science.
Sep 2009 – Jun 2013	**Beihang University** B.Eng. in Computer Science and Technology. Ranking: 2/188.

Publications

Chenxi Liu* and Mikhail Bessmeltsev* (2025). "State-of-the-art Report in Sketch Processing". In: *Computer Graphics Forum*. Eurographics'25 STAR. Wiley Online Library

Chenxi Liu, Siqi Wang, Matthew Fisher, Deepali Aneja, and Alec Jacobson (2025). "2D Neural Fields with Learned Discontinuities". In: *Computer Graphics Forum*. Eurographics'25. Wiley Online Library

Chenxi Liu, Towaki Takikawa, and Alec Jacobson (2024). *A LoRA is Worth a Thousand Pictures*. Under review. arXiv: 2412.12048 [cs.CV]

Siqi Wang, **Chenxi Liu**, Daniele Panozzo, Denis Zorin, and Alec Jacobson (2023). "Bézier Spline Simplification Using Locally Integrated Error Metrics". In: *SIGGRAPH Asia 2023 Conference Papers*. ACM

Chenxi Liu (2023). "Processing Freehand Vector Sketches". PhD thesis. University of British Columbia

Chenxi Liu, Toshiki Aoki, Mikhail Bessmeltsev, and Alla Sheffer (July 2023). "StripMaker: Perception-Driven Learned Vector Sketch Consolidation". In: *ACM Trans. Graph.* 42.4. SIGGRAPH'23

Chenxi Liu, Pierre Bénard, Aaron Hertzmann, and Shayan Hoshyari (Feb. 2023). "ConTesse: Accurate Occluding Contours for Subdivision Surfaces". In: *ACM Trans. Graph.* 42.1. SIGGRAPH'23

Jerry Yin*, **Chenxi Liu***, Rebecca Lin, Nicholas Vining, Helge Rhodin, and Alla Sheffer (2022). "Detecting Viewer-Perceived Intended Vector Sketch Connectivity". In: *ACM Trans. Graph.* 41.4. SIGGRAPH'22

Dave Pagurek van Mossel, **Chenxi Liu**, Nicholas Vining, Mikhail Bessmeltsev, and Alla Sheffer (2021). "StrokeStrip: Joint Parameterization and Fitting of Stroke Clusters". In: *ACM Trans. Graph.* 40.4. SIGGRAPH'21

Yulia Gryaditskaya, Felix Hähnlein, **Chenxi Liu**, Alla Sheffer, and Adrien Bousseau (2020). "Lifting Freehand Concept Sketches into 3D". in: *ACM Trans. Graph.* 39.6. SIGGRAPH Asia'20, pp. 1–16

Chenxi Liu, Enrique Rosales, and Alla Sheffer (2018). "StrokeAggregator: Consolidating Raw Sketches into Artist-Intended Curve Drawings". In: *ACM Trans. Graph.* 37.4. SIGGRAPH'18

Chenxi Liu, Jessica Hodgins, and James McCann (July 2017). "Whole-cloth Quilting Patterns from Photographs". In: *Proceedings of the Symposium on Non-Photorealistic Animation and Rendering*. NPAR'17

Lea Albaugh, April Grow, **Chenxi Liu**, James McCann, Gillian Smith, and Jennifer Mankoff (2016). "Threadsteading: Playful Interaction for Textile Fabrication Devices". In: *Proceedings of the 2016 CHI Conference Extended Abstracts*. CHI'16. ACM

Research & Professional Experience

Jul 2023 – Present	**DGP Lab, University of Toronto** Postdoctoral Fellow. Supervised by Prof. Alec Jacobson.
Mar 2023 – Jun 2023	**Adobe Research** Research Intern. Supervised by Deepali Aneja and Prof. Alec Jacobson.
Sep 2016 – Feb 2023	**University of British Columbia** Research Assistant. Advised by Prof. Alla Sheffer. Conducted research on the artistic creation tools.
May 2020 – Nov 2020	**Adobe Research** Research Intern. Supervised by Aaron Hertzmann. Conducted research on non-photorealistic line drawing generation.
Mar 2015 – Jul 2016	**Disney Research Pittsburgh** Research Associate. Supervised by Prof. James McCann & Prof. Jessica Hodgins. Conducted research on automatic quilting pattern generation using CNC quilting machine and graph theory.
Jul 2014 – Aug 2014	**CMU Graphics Lab** Research Assistant. Advised by Prof. Kayvon Fatahalian. Built a visualization module for a lighting control framework using Arnold.
Jul 2012 – Sep 2012	**Microsoft Search Technology Center Asia** Intern, Software Development Engineer in Test. Wrote scripts to gather statistical data and create analyses from search engine logs.
Aug 2011 – Dec 2011	**Beihang University** Research Assistant. Advised by Prof. Zhoujun Li. Built a tool to capture software exception messages.

Honors

Apr 2024	**Eurographics 2024 PhD Thesis Award, Honorable Mention** Eurographics and the Computer Graphics Forum Journal.
Feb 2024	**Faculty of Arts & Science Postdoctoral Fellowship** Faculty of Arts & Science, University of Toronto.
May 2022	**WiGRAPH Rising Stars** The ACM Community Group for Women in Computer Graphics Research.
Oct 2016	**Technology Award Winner: Threadsteading** IndieCade'16.
Nov 2011	**National Scholarship (Top 1% in Academic Performance)** Ministry of Education of the People's Republic of China.
Dec 2010 – 2012	**The First Prize Scholarship of Academic Performance** Beihang University.

Talks & Exhibition

May 2025	**University College London, University of Surrey** Invited Talk: From Sketch to Style: Analyzing Artworks Through Computation.
May 2025	**Eurographics** Conference Presenter: 2D Neural Fields with Learned Discontinuities. State-of-the-art Report in Sketch Processing.
Apr 2025	**Great Lakes Graphics Workshop@University of Chicago** Invited Talk: 2D Neural Fields with Learned Discontinuities.
Jun 2024	**ACM** / **Eurographics Symposium on Geometry Processing (SGP) Graduate School** Course: Fundamentals and Applications of Sketch Processing.
Aug 2023	**ACM SIGGRAPH** Conference Presenter: ConTesse: Accurate Occluding Contours for Subdivision Surfaces. StripMaker: Perception-driven Learned Vector Sketch Consolidation.
Fall 2022	**University of Toronto, Université de Montréal, University of Surrey** Invited Talk: Cleaning Up Vector Sketches Made by Humans and Computers.
Aug 2022	**ACM SIGGRAPH** Conference Presenter: Detecting Viewer-Perceived Intended Vector Sketch Connectivity.
Aug 2018	**ACM SIGGRAPH** Conference Presenter: Strokeaggregator: Consolidating raw sketches into artist-intended curve drawings.
Jul 2017	**Non-Photorealistic Animation and Rendering (NPAR)** Conference Presenter: Whole-cloth quilting patterns from photographs.
Mar 2016	**Alt.Ctrl.GDC, Game Developers Conference** Exhibitor: Threadsteading. (Game also attended CHI Interactivity, 2016. IndieCade, 2016)

Teaching Experience

Fall, 2023	**CSC317@UofT: Computer Graphics** Guest Lecturer and Co-Developer of LEAF+ Project (Understanding the Limits of AI-Based Image Generators with DALL·E 2 and Midjourney). Project Lead: Prof. Alec Jacobson.
Winter 1, 2022	**CPSC424@UBC: Geometric Modeling** Graduate Teaching Assistant, Instructor: Prof. Alla Sheffer.
Winter, 2019	**Instructional Skills Workshops for Grad Students@UBC**
Winter 2, 2018	**CPSC436D@UBC: Video Game Programming** Graduate Teaching Assistant, Instructor: Prof. Alla Sheffer.
Winter 2, 2016	**CPSC418@UBC: Parallel Computation** Graduate Teaching Assistant, Instructor: Prof. Mark Greenstreet.

Mentoring

2023 – 2024	Sepehr Ghasemipour University of Toronto.
2023 – 2024	Silvia Lopez University of Toronto.
2022 – 2023	Toshiki Aoki University of Tokyo.

Academic & Departmental Service

2025	**SIGGRAPH Asia** Technical Papers Committee.
2025	**Eurographics** Diversity Panelist.
2025	**Symposium on Geometry Processing** International Program Committee.
2024	**DGP Academy** Project Lead: Low-Poly Fabrication. Media.
2019 – Present	**Conference and Journal Paper Review** SIGGRAPH'22,23,24,25. SIGGRAPH Asia'22,24. ICCV'25. Eurographics'20,22,23,24. SGP'25. Pacific Graphics'20,24. TVCG'23,24,25. CGF'22,24. IEEE CG&A'20. TPAMI'19. SCF'19. UIST'24.
2018	**Graduate Student Recruiting Committee** Student Representative of Computer Graphics.
2016 – 2017	**AMORE Seminar** Imager Lab seminar organizer.

References

Alec Jacobson (Postdoc supervisor, jacobson@cs.toronto.edu), University of Toronto.
Alla Sheffer (Ph.D. supervisor, sheffa@cs.ubc.ca), University of British Columbia.
Aaron Hertzmann (internship mentor, hertzman@dgp.toronto.edu), Adobe Research.