Chenxi Liu

Email: liuchenxi0921@gmail.com
Web: https://chenxil21.github.io/

Research Interests

My Ph.D. research consists of attempts to bridge rough freehand line drawings with precise digital representations and also to robustly generate line drawings based on 3D models. My future goal is to better understand as well as assist drawing and visual creation in general.

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

Siqi Wang, **Chenxi Liu**, Daniele Panozzo, Denis Zorin, and Alec Jacobson. Bézier spline simplification using locally integrated error metrics. *ACM Trans. Graph.*, 2023

Chenxi Liu. *Processing freehand vector sketches*. Ph.D. thesis, University of British Columbia, 2023

Chenxi Liu, Toshiki Aoki, Mikhail Bessmeltsev, and Alla Sheffer. Stripmaker: Perception-driven learned vector sketch consolidation. *ACM Trans. Graph.*, 42(4), jul 2023

Chenxi Liu, Pierre Bénard, Aaron Hertzmann, and Shayan Hoshyari. Contesse: Accurate occluding contours for subdivision surfaces. *ACM Trans. Graph.*, 42(1), February 2023

Jerry Yin[*], **Chenxi Liu**[*], Rebecca Lin, Nicholas Vining, Helge Rhodin, and Alla Sheffer. Detecting viewer-perceived intended vector sketch connectivity. *ACM Trans. Graph.*, 41, 2022. [*]Joint first authors

Dave Pagurek van Mossel, **Chenxi Liu**, Nicholas Vining, Mikhail Bessmeltsev, and Alla Sheffer. Strokestrip: Joint parameterization and fitting of stroke clusters. *ACM Trans. Graph.*, 40(4), 2021

Yulia Gryaditskaya, Felix Hähnlein, **Chenxi Liu**, Alla Sheffer, and Adrien Bousseau. Lifting freehand concept sketches into 3d. *ACM Trans. Graph.*, 39(6):1–16, 2020

Chenxi Liu, Enrique Rosales, and Alla Sheffer. Strokeaggregator: Consolidating raw sketches into artist-intended curve drawings. *ACM Trans. Graph.*, 37(4), 2018

Chenxi Liu, Jessica Hodgins, and James McCann. Whole-cloth quilting patterns from photographs. In *Proceedings of the Symposium on Non-Photorealistic Animation and Rendering*, NPAR'17, July 2017

Lea Albaugh, April Grow, **Chenxi Liu**, James McCann, Gillian Smith, and Jennifer Mankoff. Threadsteading: Playful interaction for textile fabrication devices. In *Proceedings of the 2016 CHI Conference Extended Abstracts*, pages 285–288. ACM, 2016

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	**Digital Geometry Processing Group, Imager Lab, UBC** Research Assistant. Advised by Prof. Alla Sheffer. Conducting 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	**Textile Lab, Disney Research Pittsburgh** Research Associate. Supervised by Dr. 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	**Laboratory for Information Security and Intelligent Information Processing, Beihang University** Research Assistant. Advised by Prof. Zhoujun Li. Built a tool to capture exception messages for further analyses. Manually analyzed software flaws for exploitations.

Honors

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 2012, 2011, 2010	**The First Prize Scholarship of Academic Performance** Beihang University.

Talks & Exhibition

Aug 2023	**SIGGRAPH'23** 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	**SIGGRAPH'22** Conference Presenter: Detecting Viewer-Perceived Intended Vector Sketch Connectivity.
Aug 2018	**SIGGRAPH'18** Conference Presenter: Strokeaggregator: Consolidating raw sketches into artist-intended curve drawings.
Jul 2017	**NPAR'17** 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.

Undergraduate Advising

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

Services

2019 – Present	**Conference and Journal Paper Review** SIGGRAPH'22,23,24. SIGGRAPH Asia'22. Eurographics'20,22,23,24. Pacific Graphics'20,24. TVCG'23. CGF'22. IEEE CG&A'20. TPAMI'19. SCF'19.
2018	**Graduate Student Recruiting Committee** Student Representative of Computer Graphics.
2016 – 2017	**AMORE Seminar** Imager Lab seminar organizer.

Skills

Programming: C/C++, Python, MATLAB, Java, SQL.
Libraries and Tools: libigl, CGAL, scikit-learn, CUDA, OpenCL, OpenGL, CMake, Git.
Visual Editing: Illustrator, Photoshop, Premiere.

References

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