

Chuan Yan

Postdoctoral Researcher, Stanford University

Computer Graphics · Human–Computer Interaction · AI for Digital Art

Computer Science
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Education

2018-2024 George Mason University (graduation date: Dec/06/2024), USA

Ph.D. in Computer Science

Thesis: Visual Thinking: A Study of Human-Centered and AI-Based Digital Painting

Advisor: Yotam Gingold

2011-2018 Southwest Jiaotong University, China

Ph.D. Studies in Computer Science (transferred to complete Ph.D. in the U.S.)

Advisor: Qiang Peng

2003-2007 Southwest Jiaotong University, China

B.S. in Communication Engineering

Research Summary: I develop vector-based visual understanding systems and human–AI collaborative tools that advance digital drawing, painting, and professional creative workflows. My work integrates geometry, machine learning, and HCI to enable the next generation of creative intelligence.

Research Experience

Sep 2024– Stanford University

Present *Postdoctoral Researcher*

Geometry-driven sketch understanding and high-fidelity vectorization.

- Leading two independent research directions on vector-based sketch understanding using Gestalt principles, and on high-fidelity vectorization with stroke-level rendering.
- Developing a geometry-centered framework for editable vector graphics enabling precise editing and professional creative workflows.
- Principal Investigator of the MAGIC Grant-funded HiFiSketch project combining vectorization and brush-based rendering.
- Contributing to collaborative projects on sketch instance segmentation (SIGGRAPH 2025) and digital painting process modeling.

Mentor: Dr. Maneesh Agrawala

Jun 2022– Adobe Research

Aug 2022 *Research Scientist Intern*

Advanced sketch vectorization.

- Initiated and developed the technical foundations of the SIGGRAPH 2024 paper on implicit-surface-based deep sketch vectorization.
- Designed algorithms converting raster sketches into structured vector representations.
- Collaborated with Adobe Research scientists to shape future creative tooling.

Mentors: Deepali Aneja, Matt Fisher

**Sep 2019–
Sep 2020** George Mason University
Graduate Research Assistant

Sketch-based design iteration and human–AI creative workflows.

- Conducted core research on sketch cleanup, benchmarking, and vector representation leading to TOG/SIGGRAPH Asia 2020.
- Initiated early vectorization research that later evolved into higher-level SIGGRAPH work.
- Designed AI-assisted tools for professional comic workflows, leading to SIGCHI 2022 and UIST 2024.
- Investigated human–AI collaboration strategies preserving artistic agency while improving creative iteration efficiency.

Advisor: Yotam Gingold

Teaching Experience

**2018–
2024** George Mason University
Teaching Assistant (5 years)

Supported undergraduate and graduate courses across programming, theory, graphics, and visual computing. Responsibilities included leading recitations, grading, developing assignments, and mentoring project work.

Qualified to teach: Computer Graphics, Human–Computer Interaction, Visual Computing, Machine Learning for Creative AI, Programming Foundations, Computational Design.

Courses Assisted:

- CS112 Introduction to Computer Programming
- CS325 Game Design
- CS330 Formal Methods and Models
- CS351 Visual Computing
- CS530 Mathematical Foundations of Computer Science
- CS451/551 Computer Graphics (Undergraduate/Graduate)
- CS452/595 Virtual Reality (Undergraduate/Graduate)
- CS663 Computational Design

Mentoring & Project Supervision

Co-supervised research projects with faculty collaborators at external institutions, focusing on multimodal

learning and visual understanding (see publications). Provided informal research advising and portfolio feedback to junior students in graphics and HCI.

Technical Skills

Graphics & Geometry	Vector graphics systems; stroke and brush modeling; 2D/curve geometry processing; raster-to-vector pipelines; sketch understanding; rendering-oriented design for artistic workflows
Machine Learning & Generative Modeling	Diffusion models; neural rendering; multimodal modeling; deep learning frameworks (PyTorch, TensorFlow); dataset design and curation for visual tasks; geometry-informed and interpretable representation learning
Creative Tools & Human-AI Interaction	Computational design tools for professional artists; human-AI collaborative workflow design; interactive system prototyping; user-centered tool evaluation; Adobe Illustrator/Photoshop scripting; creative pipeline integration
Programming	Python; C++; C# (Unity/VR)

Professional Service

Regular reviewer for SIGGRAPH, TOG, CHI, UIST, TVCG (2022–Present)

Grants & Awards

2025–2026 Brown Institute MAGIC Grant (Stanford University)

Principal Investigator (Lead Applicant)

HiFiSketch: A high-fidelity sketch digitization system preserving stroke texture and artistic style. Supported by Stanford Engineering and Columbia Journalism.

Project collaborators: Lvmin Zhang (Stanford)

Publications

Main Track Publications (Graphics / HCI / Creative AI)

- Lvmin Zhang, **Chuan Yan**, Yuwei Guo, Jinbo Xing and Maneesh Agrawala. *Generating Past and Future in Digital Painting Processes*. SIGGRAPH 2025 (🏆 top venue).
- Mia Tang, Yael Vinker, **Chuan Yan**, Lvmin Zhang and Maneesh Agrawala. *Instance Segmentation of Scene Sketches Using Natural Image Priors*. SIGGRAPH 2025 (🏆 top venue).
- **Chuan Yan**, Yong Li, Deepali Aneja, Matthew Fisher, Edgar Simo-Serra and Yotam Gingold. *Deep Sketch Vectorization via Implicit Surface Extraction*. SIGGRAPH 2024 (🏆 top venue).
- Amrita Ganguly* and **Chuan Yan***, John Joon Young Chung, Tong Steven Sun, Yoon Kiheon, Yotam Gingold and Sungsoo Ray Hong. *ShadowMagic: Designing Human-AI Collaborative Support for Professionals' Comic Shadowing*. UIST 2024. (*equal contribution)
- **Chuan Yan**, John Joon Young Chung, Yoon Kiheon, Yotam Gingold, Eytan Adar and Sungsoo Ray Hong. *FlatMagic: Improving Webcomic Flat Colorization through AI-driven Design for Professionals*. SIGCHI 2022 (🏆 top venue).

- **Chuan Yan**, David Vanderhaeghe and Yotam Gingold. *A Benchmark for Sketch Cleanup*. ACM Transactions on Graphics (TOG), SIGGRAPH Asia 2020 (🏆 top venue).

Other Selected Publications

- Dawei Huang, **Chuan Yan**, Qing Li, Xiaojiang Peng. *From Large Language Models to Large Multimodal Models: A Literature Review*. Applied Sciences 2024.
- Qing Li, Qiang Peng, Junzhou Chen, **Chuan Yan**. *Improving Image Classification Accuracy With ELM and CSIFT*. Computing in Science and Engineering 2019.
- Qing Li, Qiang Peng, **Chuan Yan**. *Multiple VLAD Encoding of CNNs for Image Classification*. Computing in Science and Engineering 2018.
- Chongyang Xiang, Jiajun Xu, **Chuan Yan**, Qiang Peng, Xiao Wu. *Generative Adversarial Networks Based Error Concealment for Low Resolution Video*. ICASSP 2019.
- Jiajun Xu, Wei Jiang, **Chuan Yan**, Qiang Peng, Xiao Wu. *A Novel Weighted Boundary Matching Error Concealment Schema for HEVC*. ICIP 2018.