VIVIAN LIU

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EDUCATION

Columbia University, PhD Student in Computer Science   2020 - 2025
Advisor — Lydia Chilton

UC Berkeley, BA Computer Science, BA Cognitive Science   2015 - 2019
Graduated Distinction (Cum Laude) with Certificate in New Media

WORK EXPERIENCE

Computational Design Lab, Columbia University — PhD student   SEP 2020 - PRESENT
- Human-computer interaction research with generative AI models
- Integrate AI into user interfaces to build design and productivity tools for people

Google Deepmind, People + AI Research Team — Student Researcher   SEP 2024 - FEB 2025
- Prototyped multimodal interactions with real-time AI agents
- Mentors: Alex Fiannaca, Carrie Cai, Michael Terry

Adobe Research, Co-Creation Audio Video Animation — PhD Intern   JUN 2023 - APR 2024
- Designed and implemented LogoMotion, a VLM-driven code generation system for authoring and editing animation
- Mentors: Rubaiat Habib, Li-Yi Wei, Matt Fisher, Timothy Langlois

Autodesk Research, HCI & Vis Group — PhD Intern and Consultant   MAY 2022 - DEC 2022
- Designed and implemented 3DALL-E, generative tool for conceptual CAD support, which was patented and tech transferred into Fusion 360 as Project Salvador
- Mentors: Jo Vermeulen, Justin Matejka

prefrontal cortex and **All Of It Now** — Freelancer for design agencies   JAN 2020 - JUL 2020
- Implemented AI-generated art (autoencoders and GANs) with virtual reality integrations for prefrontal cortex, a design agency in Germany.
- Prototyped IoT interactions for All of It Now, immersive design agency in San Francisco.

Logitech Gaming, — Design Technologist Intern   JUN 2019 - AUG 2019
- Prototyped augmented reality solution communicating information about e-waste and sustainability on products.

Hybrid Ecologies Lab, Berkeley — HCI Researcher JAN 2017 - DEC 2017

- Human-computer interaction research around creativity support tools for writers
- Natural language processing and applied machine learning approaches on crowd-sourced data of writing style
- Designed front-end UI of interactive text editor and recommendation system

USC Institute of Creative Tech, Los Angeles — HCI Research Intern JUN 2017 - AUG 2017

- Contributed front-end of training software of Generalized Intelligence Framework for Tutoring for the Army Research Lab.
- Prototyped user interface to visualize message-oriented middleware and created content modules teaching soldiers about phishing resilience.
- Tested interactive Q&A experiences virtualizing the first-person experience of cadets.

First Data, Sunnyvale, CA — Data Science Intern JUN 2016 - AUG 2016

- Automated data pulling and data visualization in Big Data databases.
- Prototyped new product feature for visual exploration of regional economic data.

AWARDS AND HONORS

National Science Foundation Graduate Research Fellow $138,000 2020 - 2025

Gary Marsden Travel Award, CHI 2021 2021

Grace Hopper Conference Research Scholar, Computing Research Association - Women $3,000 2019

Innovation Catalyst Grantee, Jacobs Institute of Design, $2,000 2018

Leadership Award, UC Berkeley Cal Alumni Association, $3,000 2015

PATENTS

Techniques for Using Multimodal Machine Learning Models to Generate Design Alternatives for Three-Dimensional Objects 2024
V Liu, JK Vermeulen, GW Fitzmaurice, JF Matejka
US Patent App. 18/446,339

PUBLICATIONS

P1. LogoMotion: Visually Grounded Code Synthesis for Creating and Editing Logo Animations

Vivian Liu, Rubaiat Habib Kazi, Li-Yi Wei, Matt Fisher, Timothy Langlois, Seth Walker, Lydia Chilton

Conference Paper at CHI 2025.

P2. DynEx: Dynamic Code Synthesis with Structured Design Exploration for Accelerated Exploratory Programming

Jenny Ma, Karthik Sreedhar, **Vivian Liu**, Sitong Wang, Pedro AlejandroPerez, Riya Sahni, Lydia B. Chilton

Conference Paper at CHI 2025.

P3. Generative Disco ‖ Digital ``Double Hatters'': Augmenting Audiovisual Creative Work with a Generative Text-to-Video Workflow

Vivian Liu, Tao Long, Jenny Ma, Nathan Raw, Jiaxin Yang, Claudia Tang, Lulu Wang, Yumo Yang, Lydia Chilton.

Conference Paper at *HICCS 2025.*

P4. 3DALL-E: Integrating Text-to-Image AI in 3D Design Workflows

Vivian Liu, Jo Vermeulen, Justin Matejka, George Fitzmaurice.

Conference Paper at *DIS 2023.*

P5. CLIP-Sculptor: Zero-shot Generation of High Fidelity and Diverse Shapes from Text

Aditya Sanghi, Rao Fu, **Vivian Liu**, Karl Willis, Hooman Shayani, Amir Khasahmadi, Srinath Sridhar, Daniel Ritchie.

Conference Paper at *CVPR 2023*.

P6. Opal: Multimodal Image Generation for News Illustration.

Vivian Liu, Han Qiao, Lydia Chilton.

Conference Paper at *UIST 2022*.

P7. Design Guidelines for Prompt Engineering Text-to-Image Generative Models.

Vivian Liu, Lydia Chilton.

Conference Paper at *CHI 2022*.

P8. Improving Subject Representation in AI Generated Art: Design Guidelines for Using Image Prompts with Text-to-Image Generative Models.

Han Qiao**, Vivian Liu**, Lydia Chilton.

Conference paper at *Creativity and Cognition 2022.*

P9. Sparks: Inspiration for Science Writing using Language Models.

Katy Gero, **Vivian Liu**, Lydia Chilton. Conference paper at *DIS 2022* and workshop paper at *ACL 2022 In2Writing Workshop.*

P10. What Makes Tweetorials Tick: How Experts Communicate Complex Topics on Twitter.

Katy Gero, **Vivian Liu**, Lydia Chilton. Conference paper at *CSCW 2021*.

P11. VisiFit: Structuring Iterative Improvement for Novice Designers.

Lydia Chilton, Ecenaz Ozmen, Sam Ross, **Vivian Liu.** Conference Paper at *CHI 2021*.

P12. Interacting with Literary Style Through Computational Tools.

Sarah Sterman, Evey Huang, **Vivian Liu**, Eric Paulos. Conference Paper at *CHI 2020*.

WORKSHOP PAPERS

W1. MIRACLE: An Online, Explainable Multimodal Interactive Concept Learning System

Ansel Blume, Khanh Duy Nguyen, Zhenhailong Wang, Yangyi Chen, Michal Shlapentokh-Rothman, Xiaomeng Jin, Jeonghwan Kim, Zhen Zhu, Jiateng Liu, Kuan-Hao Huang, Mankeerat Sidhu, Xuanming Zhang, **Vivian Liu**, Raunak Sinha, Te-Lin Wu, Abhay Zala, Elias Stengel-Eskin, Da Yin, Yao Xiao, Utkarsh Mall, Zhou Yu, Kai-Wei Chang, Camille Cobb, Karrie Karahalios, Lydia Chilton, Mohit Bansal, Nanyun Peng, Carl Vondrick, Derek Hoiem, Heng Ji
Demo at *ACMMM 2024 Technical Demos and Videos Program*

W2. Analyzing the Cultural Relevance of AI Generated Art.

Aaron Jackson**, Vivian Liu**, Lydia Chilton. Workshop paper at *CHI 22 Generative AI and HCI Workshop*.

W3. Neurosymbolic Generation of 3D Animal Shapes through Semantic Guidance.

Vivian Liu, Lydia Chilton. Demo at *IUI 2021* Workshop on Human-AI Co-Creation with Generative Models.

W4. Quantifying Blepharospasm with Computer Vision Augmented Glasses.

Vivian Liu. Extended abstract and student poster at *International Symposium for Academic Makerspaces 2018*.

INVITED TALKS

Berkeley Institute for Design Seminar.	JAN 2025
Brown Visual Computing Seminar.	NOV 2024
STEM From Dance, Girls Rise Up (NGO Program) *Researching AI + Design and Workshop on Generative Music Visualization*	JUL 2021, 2022, 2023, 2024
SPARK ANIMATION AI Track, *Text-to-Image AI for Animation*	OCT 2022
Program Synthesis Lab @ Barnard, *Supporting Creativity w/ Generative Mod* Host: Prof. Mark Santolucito	MAY 2022

Fashion Institute of Technology, *Generative AI*   DEC 2021
    Host: Prof. Maria Hwang

Design @ Columbia, *Nontraditional Design Paths*   SEP 2021

ACADEMIC SERVICE

CHI 2025 Program Committee, Design Subcommittee Associate Chair

UIST 2023 Organizing Committee, Web Chair

Columbia CS Department Service Award 2022

Program Committee for ACL 2022 Workshop (in2writing)

Reviewer for:
CHI2022 - 2025, UIST 2022 - 2024, DIS 2023 - 2025, SIGGRAPH ASIA 2024 - 2025
12 Recognitions for Outstanding Reviews

VOLUNTEERING

United Tech for Kids (NGO), Peru— Design Engineering Instructor   JAN 2017 - JUN 2017
- Implemented makerspaces across a network of schools in Peru and Colombia
- Taught creative coding & computer-aided design at Colegio Santa Maria and produced tangible user interfaces and creative coding course content
- Created assistive tech mouse physical computing peripheral for a quadriplegic local, which was featured on local news

Creative Coding Workshops — Bay Area libraries and schools   NOV 2017 - MAR 2017
- Developed STEAM-oriented teaching material about how programming can engage the imagination, having them create games, fractals, and animations
- Taught workshops reaching a total of 100 students aged 5 to 17

Girls in Engineering — Open Prosthetics Workshop Mentor   AUG 2018
- Mentored girls in 3D printing and makerspace shop skills to create Raptor Hand, an open-source hand prosthetic

ART EXHIBITS

Minnesota Street Pop Up: *Simulations & Stimulations*   JUN 2019

- Mixed reality installation meditating on how large the human handprint is in comparison to the size of the Earth

Worth Ryder Art Gallery, Vision + Light   FEB 2019
- Display of the process and final prototype of a wearable data diary of eye disability