VIVIAN LIU

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Human-Computer Interaction x Generative AI Researcher, NSF Graduate Research Fellow

EDUCATION

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

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

INDUSTRY EXPERIENCE

Google Deepmind, People + AI Research Team — Student Researcher   SEP 2024-NOW
- Interactions with state-of-the-art AI agents

- Mentors: Alex Fiannaca, Carrie Cai, Michael Terry

Adobe Research, Co-Creation Audio Video Animation Group — PhD Intern   JUN 2023-APR 2024
- Created 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 - DEC 2022
- Mentors: Jo Vermeulen, Justin Matejka
- Created 3DALL-E, generative tool for conceptual CAD support
- Patented and tech transferred as Project Salvador within Fusion 360

Computational Design Lab, Columbia University — PhD student   AUG 2020 - NOW
- Human-computer interaction research with generative AI models
- Integrate AI into user interfaces to build creativity support tools for people

Computer Enabled Abilities Lab, Columbia University — PhD student   MAR 2021 -MAY 2022
- Human-computer interaction research and accessibility for visually impaired users

prefrontal cortex and **All Of It Now** — Freelance at design agencies JAN - 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 - AUG 2019
- Produced augmented reality prototype for product stewardship (e-waste sustainability).

CITRIS Invention Lab — Superuser   JUN 2018 - DEC 2019
- Led assistive tech team in creation of an assistive technology wearable for eye disabilities.

- Mentored a team of undergraduates in physical computing, computer science, product design.

Hybrid Ecologies Lab, Berkeley — HCI Researcher   JAN - 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

UCSF Neuroscape, Mentee of Director of Interactive Technology   DEC 2017 - JAN 2018
- Learned how to develop longitudinal HCI systems tracking neuroplasticity through Unity applications centered around rhythm improvement and movement
- Prototyped vision therapy game using eye-tracking FOVE and Kinect sensors

USC Institute of Creative Tech, Los Angeles — HCI Research Intern   JUN - 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 - AUG 2016
- Automated data pulling and data visualization in Big Data databases.
- Prototyped new product feature for visual exploration of regional economic data.

ACADEMIC HONORS / AFFILIATIONS

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

Gary Marsden Travel Award, CHI 2021   2021

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

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

Berkeley AI Research (BAIR) Mentee   2017

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

V Liu, JK Vermeulen, GW Fitzmaurice, JF Matejka

US Patent App. 18/446,339

RESEARCH 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

Under Submission

P2. 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*.

P3. 3DALL-E: Integrating Text-to-Image AI in 3D Design Workflows

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

Conference Paper at *DIS 2023*.

P4. Opal: Multimodal Image Generation for News Illustration.

Vivian Liu, Han Qiao, Lydia Chilton.

Conference Paper at *UIST 2022*.

P5. Design Guidelines for Prompt Engineering Text-to-Image Generative Models.

Vivian Liu, Lydia Chilton.

Conference Paper at *CHI 2022*.

P6. 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

ACMMM 2024 Technical Demos and Videos Program

P7. 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

Under Submission

P8. 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*.

**P9. 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.*

P10. 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.*

**P11. 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 / ABSTRACTS

W1. Analyzing the Cultural Relevance of AI Generated Art.
Aaron Jackson**, Vivian Liu**, Lydia Chilton. Workshop paper at *CHI 22
Generative AI and HCI Workshop.*

**W2. 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.

**EA2. Quantifying Blepharospasm with Computer Vision Augmented
Glasses.**
Vivian Liu. Extended abstract and student poster at *International
Symposium for Academic Makerspaces 2018*.

INVITED TALKS

Brown Visual Computing Seminar, Enabling Design with AI through
Interactive Techniques for Multimodal Integration

STEM From Dance, Girls Rise Up (NGO Program) *Researching AI + Design*   JUL 2021, 22,23, 24

SPARK ANIMATION AI Track, *Text-to-Image AI for Animation*   OCT 2022

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

Design @ Columbia, *Nontraditional Design Paths*   SEP 2021

STEM From Dance, Girls Rise Up (NGO Program) *Researching AI + Design*   JUL 2021

Program Synthesis Lab @ Barnard, *Supporting Creativity w/ Generative Models*   MAY 2022
Host: Prof. Mark Santolucito

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 CHI2025, CHI2024, CHI 2023, CHI 2022, UIST 2024, UIST 2023, UIST 2022, TCVG 2023, SIGGRAPH ASIA 2024
12 Recognitions for Outstanding Reviews

United Tech for Kids (NGO), Peru— Design Engineering Instructor   JAN - JUN 2017
- Implemented makerspaces across a network of schools in Peru and Colombia
- Taught creative coding & computer-aided design at Colegio Santa Maria using tangible user interfaces and creative coding content I produced
- 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 - 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
AUG 2018

- Mentored girls in creating complexity out of 3D printing and makerspace shop skills, grounded in an example of the 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