Gabriel Lipkowitz

Website **Scholar** **Portfolio**

Research interests	Interactive 3D design, 3D user interface design, Spatial design, XR design, Human-computer interaction	
Professional Experience	**Assistant Professor (incoming)** Division of Industrial Design National University of Singapore	Singapore, SG November 2024
Education	**Stanford University** PhD in Mechanical Engineering	Stanford, CA 2020 – 2024
	Imperial College London MSc in Applied Computational Science and Engineering *Graduated with highest honors*	London, UK 2019 – 2020
	Princeton University Bachelor of Arts *Graduated summa cum laude*	Princeton, NJ 2015 – 2019
Major Awards and Fellowships	Graduate Research Fellowship (National Science Foundation) Fulbright Scholarship (US/UK Fulbright Commission) Sigma Xi Thesis Award (Princeton University)	2020 - 2024 2019-2020 2019

Research Publications (Conferences)

Palimpsest: a spatial user interface toolkit for cohering tracked physical entities and interactive 3D content
Lipkowitz, G.
Accepted: *ACM Symposium on User Interface Software and Technology, Demonstration, 2024.*

RubiXR: Demonstration of dynamic task augmentation through co-design of interactive 3D content and 3D user interfaces
Lipkowitz, G.
Accepted: *ACM Symposium on Spatial User Interaction, Demonstration, 2024.*

Palette-PrintAR: augmented reality design and simulation for multicolor resin 3D printing
Lipkowitz, G., Shaqfeh, E.S.G., and DeSimone, J.M.
ACM Conference on Human Factors in Computing Systems, Full Paper, 2024.

Palette-PrintAR: an augmented reality fluidic design tool for multicolor resin 3D printing
Lipkowitz, G., Shaqfeh, E.S.G., and DeSimone, J.M.
ACM Symposium on User Interface Software and Technology, Late-Breaking Work, 2023.

Printing atom-efficiently: faster fabrication of farther unsupported overhangs by fluid dynamics simulation
Lipkowitz, G., Krishna, N. Coates, I., Shaqfeh, E.S.G., and DeSimone, J. M.
ACM Symposium on Computational Fabrication, Full paper, 2023.

Paraflow: A Computational Design Tool for Support-free Multimaterial 3D Printing
Lipkowitz, G., Shaqfeh, E.S.G. and DeSimone., J.M.
ACM Conference on Human Factors in Computing Systems, Extended Abstracts, 2023.

Interactive Fluid Dynamics Simulation with Real-time Visualization for Augmented Resin 3D Printing
Lipkowitz, G., DeSimone, J.M.
International Solid Freeform Fabrication Symposium, Full Paper, 2023.

Generative co-design for microfluidics-accelerated 3D printing
Lipkowitz, G., Shaqfeh, E.S.G., DeSimone, J.M.
ACM Symposium on Computational Fabrication, Demonstration track, 2022.

Digital Microfluidic Design for Injection Continuous Liquid Interface Production of 3D Objects
Lipkowitz, G., ..., Shaqfeh, E.S.G., DeSimone, J.M.D
International Solid Freeform Fabrication Symposium, Full Paper, 2022.

Research Publications (Journals)

Injection continuous liquid interface production of 3D objects
Lipkowitz, G., Samuelsen, T., Hsiao, K., Lee, B., ... DeSimone, J. M.
Science Advances, 2022.

Growing three-dimensional objects with light
Lipkowitz, G.*, Saccone, M.*, ..., and DeSimone, J.M.
* Authors contributed equally to this work.
Proceedings of the National Academy of Sciences, 2024.

Computational design for injection continuous liquid interface production
Lipkowitz, G., Krishna, N., Coates, I., Shaqfeh, E.S.G., and DeSimone, J.M.
Advanced Manufacturing, 2024.

Single-digit-micrometer-resolution continuous liquid interface production
Hsiao, K., Lee, B. J., Samuelsen, T., Lipkowitz, G., ..., DeSimone, J. M.
Science Advances, 2022.

Characterization of a 30 µm pixel size CLIP-based 3D printer and its enhancement through dynamic printing optimization
Lee B.J., Hsiao K., Lipkowitz, G., Samuelsen T., Tate L., DeSimone J.M.
Additive Manufacturing, 2022.

Teaching

CS12SI: Spatial Computing Workshop Spring 2024
Course instructor
Department of Computer Science, Stanford University

CS11SI: How to Build VR: Intro. to Virtual Reality Design Fall 2023
Course project advisor
Department of Computer Science, Stanford University

CEE 220C: Parametric Design and Optimization Spring 2022
Teaching assistant
Department of Civil and Environmental Engineering, Stanford University

CEE 220A: Building Modeling for Design and Construction Summer 2022
Head teaching assistant
Department of Civil and Environmental Engineering, Stanford University

Biodesign collaboratory teaching associate Spring 2022 - 2024
Byers Center for Biodesign, Stanford University

Graduate teaching assistant Spring 2023 - 2024
Uytengsu Undergraduate Teaching Lab, Stanford University

Exhibits

G-code is my love language San Jose State University (Nov. 2023 - Feb. 2024)
Fabrication lead

Industry work

Extended Reality Project Incubator Stanford CA, USA (Nov. 2023)
Student project advisor

Immerse the Bay XR Hackathon Stanford CA, USA (Oct. 2023)
Hackathon Organizer

Methods and Systems for Making Polymeric Microstructures 2023
Patent issued
Lipkowitz, G. Dulay, M., Samuelsen, T. Shaqfeh, E.S.G., DeSimone, J.M.

Polym. Structures having a Micro-void space and Methods for Making 2023
Patent pending
Coates, I. Lipkowitz, G. DeSimone, J.M.

Invited Talks & Presentations

Programme in Design and AI, SUTD	Singapore, SG (Jul. 2024)
Dept. of Computer Science, University of Bath	Bath, UK (Jun. 2024)
Dept. of Mechanical Engineering, Univ. of Michigan	Ann Arbor, MI, USA (Apr. 2024)
ACM Conf. on Human Factors in Computing Systems	Hawaii, HI USA (May 2024)
Division of Industrial Design, NUS	Singapore, SG (Apr. 2024)
Dept. of Math and Science, Pratt Institute	New York, NY USA (Apr. 2024)
Dept. of Computer Science, Dartmouth	Dartmouth MA, USA (Feb. 2024)
ACM Symposium on Computational Fabrication	New York, NY USA (Oct. 2023)
International Solid Freeform Fabrication Symposium	Austin, TX USA (Aug. 2023)
Foundations of Data Science Invited Lecture	Berkeley, CA USA (Aug. 2023)
eWEAR Annual Symposium	Stanford, CA USA (Feb. 2023)
GRC Additive Manufacturing of Soft Materials	Ventura CA, USA (Aug. 2022)

Academic Service

Peer reviewer, *Nature*	2023-2024
Session chair, *Solid Freeform Fabrication Symposium*	2023
Peer reviewer, *Nature Communications*	2022
Peer reviewer, *Science Advances*	2022-2023
Peer reviewer, *Solid Freeform Fabrication Symposium*	2023
Peer reviewer, *ACM Symposium on Computational Fabrication*	2023

Technical Skills

Programming languages
Proficient in: C#, C++, Python, Swift

3D Modeling / **Game Engines**
Proficient in: Blender, Unity, Rhino/Grasshopper
Familiar with: Unreal Engine, Bezi