Maxine Perroni-Scharf

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Education

Massachusetts Institute of Technology — Cambridge, MA
Ph.D., Electrical Engineering and Computer Science – Advisor: Stefanie Mueller — *Sep 2023 –*
Graduate courses: Robotic Manipulation, Advances in Computer Vision, Decarbonized Energy Systems (GPA: 5.0/5.0)

Princeton University — Princeton, NJ
M.S.E., Computer Science – Advisor: Szymon Rusinkiewicz — *Sep 2021 – June 2023*
Graduate courses: Advanced Computer Vision, Advanced Computer Graphics, Computational Complexity, Information Theory, Large Language Models, Recent Advances in Computer Vision (GPA: 4.0/4.0)

Dartmouth College — Hanover, NH
A.B. – Majors: Mathematics, Computer Science; Minor: Digital Arts — *Sep 2017 – June 2021*
Honors: *Summa Cum Laude, Phi Beta Kappa, Sigma Xi, High Honors in Computer Science*

Aquincum Institute of Technology — Budapest, Hungary
Computer Science Study Abroad Program — *Sep 2019 – Dec 2019*

Honors and Awards

Mathworks Fellowship, 2025-26 (full funding)

ACM CHI Best Paper Honorable Mention Award, 2025

MIT Morningside Academy for Design (MAD) Fellowship, 2024-25 (full funding)

American Association of University Women (AAUW) International Doctoral Degree Fellowship Alternate, 2024

Andrew (1956) and Erna Viterbi Fellowship, MIT, 2023-24 (full funding)

Google CS Research Mentorship Program, 2022

Dartmouth Innovation and Technology Festival Grand Prize, 2022

Assistantship in Instruction, Princeton University, 2021-23 (full funding)

Adobe Research Women in Technology Scholarship, 2021

Christopher G. Reed Science Competition 3rd Place, Dartmouth College, 2021

Lovelace Research Scholarship, Dartmouth College, 2021

Dartmouth Designathon 1st Place, 2021

Junior Research Scholarship, Dartmouth College, 2020

Rewriting the Code Fellowship, 2019, 2020

PUBLICATIONS

Maxine Perroni-Scharf, Jennifer Xiao, Cole Paulin, Zhi Ray Wang, Ticha Sethapakdi, Muhammad Abdullah, Patrick Baudisch and Stefanie Mueller. SustainaPrint: Making the Most of Eco-Friendly Filaments. *ACM UIST Conference Proceedings*, 2025.

Ticha Sethapakdi, **Maxine Perroni-Scharf**, Jiaji Li, Justin Solomon, Arvind Satyanarayan and Stefanie Mueller. FabObscura: Computational Design and Fabrication for Interactive Barrier-Grid Animations. *ACM UIST Conference Proceedings*, 2025.

Maxine Perroni-Scharf*, Zachary Ferguson*, Thomas Butrille, Carlos Portela, and Mina Konaković Luković. Data-Efficient Discovery of Hyperelastic TPMS Metamaterials with Extreme Energy Dissipation. *ACM SIGGRAPH Conference Proceedings*, 2025.

Leonardo Hernández Cano, **Maxine Perroni-Scharf**, Neil Dhir, Arun Ramamurthy, Armando Solar-Lezama. Neurosymbolic World Models for Sequential Decision Making. *ICML Conference Proceedings*, 2025.

Jiaji Li, Shuyue Feng, **Maxine Perroni-Scharf**, Yujia Liu, Emily Guan, Guanyun Wang, and Stefanie Mueller. Xstrings: 3D Printing Cable-driven Mechanism for Actuation, Deformation, and Manipulation. *ACM CHI Conference Proceedings*, 2025 🏆 *CHI Best Paper Honorable Mention Award.*

Faraz Faruqi, **Maxine Perroni-Scharf**, Jaskaran Singh Walia, Yunyi Zhu, Shuyue Feng, Donald Degraen, and Stefanie Mueller. TactStyle: Enhancing 3D Model Stylization with Realistic Texture Generation for Digital Fabrication. *ACM CHI Conference Proceedings*, 2025.

Maxine Perroni-Scharf and Szymon Rusinkiewicz. Constructing Printable Surfaces with View-Dependent Appearance. *ACM SIGGRAPH Conference Proceedings*, 2023.

Maxine Perroni-Scharf, Kalyan Sunkavalli, Jonathan Eisenmann, and Yannick Hold-Geoffroy. Material Swapping for 3D Scenes Using a Learnt Material Similarity Measure. *WICV Workshop at IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)*, 2022.

Luyang Zhao, Yijia Wu, Julien Blanchet, **Maxine Perroni-Scharf**, Xiaonan Huang, Joran Booth, Rebecca Kramer-Bottiglio, and Devin Balkcom. Soft Lattice Modules That Behave Independently and Collectively. *IEEE Robotics and Automation Letters and IEEE Conference on Soft Robotics (RA-L and RoboSoft)*, 2022.

Charles J. Carver, Qijia Shao, Samuel Lensgraf, Amy Sniffen, **Maxine Perroni-Scharf**, Hunter Gallant, Alberto Quattrini Li, and Xia Zhou. Sunflower: Locating Underwater Robots from the Air. *ACM International Conference on Mobile Systems, Applications, and Services (MobiSys)*, 2022. *Dartmouth Innovation and Technology Festival Grand Prize*.

Tianshun Miao, Heather Petroccia, Yunhe Xie, Michael Jermyn, **Maxine Perroni-Scharf**, Namit Kapoor, James Mahoney, Timothy Zhu, Petr Bruza, Benjamin Williams, David Gladstone, and Brian Pogue. Computer Animation Body Surface Analysis of Total Skin Electron Radiation Therapy Dose Homogeneity via Cherenkov Imaging. *Journal of Medical Imaging*, 2020.

PATENTS

Maxine Perroni-Scharf, Kalyan Sunkavalli, Jonathan Eisenmann, Yannick Hold-Geoffroy. *Modifying Materials of Three-dimensional Digital Scenes Utilizing a Visual Neural Network*. US20230141395A1, published 04/30/2024.

Short Papers/Demos

Raul Hernandez, **Maxine Perroni-Scharf**, Mina Konavokić Luković. MMMetaMix: A Multiclass Metamaterial Encoding for Interpolation and Geometry Generation. *ACM SCF 2025 Adjunct Proceedings*.

Jiaji Li, Shuyue Feng, **Maxine Perroni-Scharf**, Yujia Liu, Emily Guan, Guanyun Wang, and Stefanie Mueller. Demonstrating Xstrings: 3D Printing Cable-driven Mechanism for Actuation, Deformation, and Manipulation. *ACM CHI 2025*.

Faraz Faruqi, **Maxine Perroni-Scharf**, Jaskaran Singh Walia, Yunyi Zhu, Shuyue Feng, Donald Degraen, and Stefanie Mueller. Demonstration of TactStyle: Enhancing 3D Model Stylization with Realistic Texture Generation for Digital Fabrication. *ACM CHI 2025*.

Research Under Review

Anonymous. First-author submission (Stable Diffusion + ControlNet). *Submitted to ACM CHI 2026*.

Anonymous. Co-authored submission (3D-printed Mechanisms). *Submitted to ACM CHI 2026*.

Invited Talks and Presentations

3D Printing with Machine Learning
MIT Museum After Dark, 09/12/2024

Fabricating View-Dependent Appearances
Samsung AI Center Montreal, 02/24/2022 and McGill University, 02/25/2022

Industry Experience

Google Mountain View, CA
Student Researcher *June 2025 – August 2025*
Contributed to a strategic initiative. Worked on hardware and machine learning at Google Beam.

Dropbox New York, NY
Software Engineering Intern *May 2022 – August 2022*
Implemented the advanced analytics features for Docsend video transfer, deployed in Fall 2022. Worked on a team of three to design, 3D model, and 3D print a Yubikey cover. The project won the award for best intern Hackweek project at Dropbox.

Adobe Vancouver, Canada
Research Intern *June 2021 – August 2021*
Developed a data-augmentation pipeline that uses a novel CNN-based material similarity metric to swap out materials in synthetic 3D scenes. Wrote and presented a workshop paper at CVPR 2022, and filed a US patent application for the project.

Bank of America London, UK
Global Technology and Operations Intern *June 2020 – August 2020*
Led an intern team to develop a natural language processing powered search phrase application to identify legal clauses in the European Banking Authority Regulations.

Snow Country Tokyo, Japan
Software Engineering Intern *June 2018 – Oct 2018*
Made a desktop application for predicting seasonal profits. Designed and built the company's website.

SERVICE

ACM Women in Graphics (WIGRAPH)

Executive Committee Member *Sep 2023 –*

Organized and promoted the Rising Stars program, which sponsors SIGGRAPH attendance for early career women researchers in computer graphics and pairs them with faculty and industry mentors.

MIT Sidney-Pacific Graduate Dorm

Trustee (2025), President (2024), Coffee Chair (2023) *Sep 2023 –*

Served as the elected president (2024) and trustee (2025) of the dorm with over 700 residents. Served as coffee chair (2023), running bi-weekly coffee hours for over 200 guests.

MIT MakerWorkshop

Mentor *September 2025 –*

Train and assist students using MIT's only student-run makerspace.

MIT Morningside Academy for Design (MAD)

Student Advisory Board Member *Sep 2025 –*

Active invited member of the MIT MAD student advisory council.

MIT Graduate Student Council

Voting Council Member *Feb 2024 –*

Representative of Sidney Pacific Graduate Dormitory.

MIT Graduate Applicant Assistance Program (GAAP)

Executive Committee Member (2025), Mentor (2024) *Sep 2024 –*

Served on the executive committee starting 2025, organizing the program where MIT EECS PhD students provide mentorship and assistance with graduate school applications. Mentored two underrepresented undergrads during the 2024 CS PhD admissions cycle. "Testimonial:
Thank you so much Maxine! I really couldn't have done this without her. Best mentor ever."

Research Mentees

Raul Hernandez (MIT Undergrad)

Zhi Ray Wang (MIT Masters)

Cole Paulin (MIT Masters)

Jennifer Xiao (HCI Engineering Group Research Assistant)

Reviewer

ACM SIGGRAPH: 2023, 2024

ACM Symposium on Computational Fabrication: 2024, 2025

ACM CHI Late Breaking Work: 2025 (received special recognition for outstanding review)

Teaching Experience

Princeton University Princeton, NJ

Graduate Preceptor *Sep 2022 – June 2023*

Introduction to Programming Systems (COS 217), Fall 2021, Spring 2022 and Fall 2022:
Taught precept classes on C and ARM assembly programming and created exam questions.

Computer Vision (COS 429), Spring 2023:
Coordinated and released assignments, held office hours and wrote the midterm exam.

Dartmouth College Hanover, NH

Teaching Assistant *Jan 2018 – June 2021*

Projects in Digital Arts (CS 27), Spring 2021.

Applied Computer Science (CS 70.01), Winter 2021.

AR/VR Development (CS 89.25), Fall 2020.

Artificial Intelligence (CS 76/176), Fall 2020: Undergraduate and graduate level course.

GPU Computing (CS 89.22/189.22), Spring 2020: Undergraduate and graduate level course.
Held office hours and code review sessions for CUDA programming.

Animation (CS 24), Winter 2020.

Introduction to Programming (CS 1), Winter 2018 and Spring 2018:
Taught Python tutorial classes.

Other Projects

Novel View Synthesis on Sketches
Used an VAE and a GAN to develop a system that takes in pencil sketches of the same object from different poses and synthesizes novel views in the same sketch style.

Object Manipulation with Modular Planar Tensegrity Robots
Advisor: Devin Balkcom. Part of this work continued in a collaboration with the Dartmouth Reality and Robotics lab for the paper "Soft Lattice Modules That Behave Independently and Collectively" (maxineps.com/tensegrity).

VR Social Interactions
Advisor: James Mahoney. Collaborated with Facebook and Dartmouth College researchers to review and integrate feedback into an online multi-user VR environment, using C# and Unity to create spatialized audio and interactive elements.

Llampaca
Created an Android ML-powered alpaca scavenger hunting application, with Andrei Stanciu (maxineps.com/llampaca).

Cirendell Forest VR
Developed a forest-themed virtual reality game for Oculus Quest (maxineps.com/cirendell-forest-vr).

Extra-Curricular Activities

Painting, sketching and print-making (maxineps.com/fine-art-gallery).

3D modeling and animation (maxineps.com/digital-art-gallery).

Classical solo music (ABRSM Grade 8 Distinction in voice and piano, ABRSM Grade 6 Distinction in pipe-organ).

Music ensembles (MIT Latin Music Society co-founder, MIT Emerson Harris Music Scholar, MIT CMS Jazz Combos vocalist, MIT Vocal Jazz Ensemble, Princeton Early Music vocalist, Princeton Glee Club vocalist, Princeton Graduate Jazz Collective founder, vocalist and pianist, Dartmouth Summerphonix music director, Rodolfus Choir vocalist).

Skiing (certified ski instructor).

References

Stefanie Mueller, Szymon Rusinkiewicz, Olga Russakovsky, Kalyan Sunkavalli.