Maxine Perroni-Scharf

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EDUCATION

Massachusetts Institute of Technology　　Cambridge, MA
Ph.D. Student – Electrical Engineering and Computer Science　　*Sep 2023 –*
Graduate courses: Robotic Manipulation, Advances in Computer Vision (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* (GPA: 3.97/4.0)

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

HONORS AND AWARDS

MIT Morningside Academy for Design (MAD) Fellowship, 2024 (full second-year PhD funding)

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

Andrew (1956) and Erna Viterbi Fellowship, MIT, 2023 (full first-year PhD funding)

Google CS Research Mentorship Program, 2022

Dartmouth Innovation and Technology Festival Grand Prize, 2022

Assistantship in Instruction, Princeton University, 2021-2023 (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 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.

INVITED TALKS

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

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
President   *2024*

   Elected president of MIT SidPac graduate dorm (over 700 residents).

MIT Undergraduate Research Opportunity (UROP)
Advisor   *2024*

   Project advisor for undergraduate student Raul Hernandez.

MIT Graduate Applicant Assistance Program (GAAP) Mentor
Mentor   *2024*

   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".

Reviewer

   SIGGRAPH: 2023, 2024

   ACM Symposium on Computational Fabrication (SCF): 2024

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).

Industry Experience

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. This 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*

   Independently made a desktop application for predicting seasonal profits. Designed and built the company's website.

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 for the course.

> **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.

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 CMS Jazz Combos vocalist, 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).