Sarah Kushner

PhD student · Computer graphics

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Education

University of Toronto — *Toronto, ON, Canada*

PhD in Computer Science – Geometry Processing & Fabrication — *September 2017 - 2023 (expected)*

Advised by Alec Jacobson
Thesis: *Fabricated Cinematography Techniques for 3D Printed Film*

Institut polytechnique de Grenoble (Grenoble INP) — *Grenoble, France*

MS in Informatics – Graphics, Vision & Robotics Specialty — *September 2016 - June 2017*

Advised by Marie-Paule Cani and Rémi Ronfard
Thesis: *The Sketch-Based Posing and Animation of Multiple Characters: Animation of Dancing Couples*

Drexel University — *Philadelphia, PA, USA*

BS in Computer Science, Minor in Digital Media — *September 2012 - June 2016*

Magna Cum Laude
Pennoni Honors College

Experience

University of California, Santa Barbara — *Santa Barbara, CA, USA*

Visiting PhD student in the BioShape Lab — *October 2022 - January 2023*

Project on temporally downsampling high frame rate animations using geometric statistics

Inria Grenoble Rhône-Alpes — *Montbonnot-Saint-Martin, France*

Research Intern (Stagiaire) — *February 2017 - June 2017*

Project on sketch-based animation techniques and numerical methods to animate multiple characters

Drexel University — *Philadelphia, PA, USA*

Research Assistant — *March 2015-August 2015*

Project on designing a course on Knowledge Representation and Reasoning and Privacy

Applied Informatics Group — *Philadelphia, PA, USA*

Research Software Engineer Co-op — *September 2014 - March 2015*

Project on building a robust intelligent system to answer cybersecurity queries

Publications, Posters & Demos

Interactive 3D Zoetrope with a Strobing Flashlight (Demo) — *Bend, OR, USA*

User Interface Software and Technology (UIST) — *October 2022*

Sarah Kushner, Paul H. Dietz, Alec Jacobson

Levitating Rigid Objects with Hidden Rods and Wires — *Vienna, Austria (remote)*

Eurographics — *May 2021*

Sarah Kushner, Risa Ulinski, Karan Singh, David I.W. Levin, Alec Jacobson

Example-Based Print Preview for Laser Cutting (Poster) — *Toronto, ON, Canada*

Graphics Interface — *May 2018*

Sarah Kushner, Alec Jacobson

Ontology-Driven Data Semantics Discovery for Cyber-Security (Poster) — *Harrisburg, PA, USA*

Undergraduate Research at the Capitol — *April 2016*

Sarah Kushner, Marcello Balduccini

Ontology-Driven Data Semantics Discovery for Cyber-Security — *Portland, OR, USA*

Practical Aspects of Declarative Languages — *June 2015*

Marcello Balduccini, Sarah Kushner, Jacquelin Speck

Talks

Zoetrope Cinematography and the Timing Animation Principles — *Santa Barbara, California, USA*
BioShape Lab — *October 2022*

Fabricating Cinematography Techniques for 3D Printed Movies — *Vienna, Austria (remote)*
Eurographics Doctoral Consortium — *May 2021*

Levitating Rigid Objects with Hidden Rods and Wires — *Toronto, ON, Canada*
Toronto Geometry Colloquim — *April 2021*

Levitating Rigid Objects with Hidden Rods and Wires — *Toronto, ON, Canada*
University of Toronto Graphics Club Rapid Fire Talks — *March 2021*

Sneakily Staging Structually Sound Supports — *Waterloo, ON, Canada*
Montreal Toronto Graphics Workshop — *November 2019*

Invisible Supports for 3D Zoetrope Movies — *Montréal, QC, Canada*
Montreal Toronto Graphics Workshop — *November 2018*

Realistic Example-Based Print Preview for Laser Cutting — *Toronto, ON, Canada*
Montreal Toronto Graphics Workshop — *November 2017*

Skills

Software

3D Software: Blender, Autodesk Maya, OpenSCAD
2D Software: Adobe Photoshop, Illustrator, AfterEffects, Google Slides, Apple Keynote, iMovie, Microsoft PowerPoint, Excel, Word
iPad: ProCreate
IDEs: Visual Studio, Visual Studio Code

Hardware

Machines: 3D printing, laser cutting
Electronics: Arduino, basic circuit design, LEDs, stepper motors, IR sensors/photo interrupter
Building: Soldering, jigsaw, drill press, aluminum extrusion design and assembly

Programming Languages

Python, C++, Matlab, HTML, Bash, LaTeX, Javascript

Art

Painting: watercolour, acrylic
Drawing: graphite, charcoal, chalk pastel
Digital: graphic design, iPad drawing

Teaching

CSC 317/2504 - Computer Graphics — *University of Toronto*
Course Instructor — *Summer 2020*
Taught the fourth year undergraduate graphics course remotely to ~70 students

CSC 419/2520 - Geometry Processing — *University of Toronto*
Teaching Assistant — *Winter 2020*
Lead tutorial sessions to asisst students with homework assignments, marked assignments and final projects

CSC 2521 - Topics in Computer Graphics: Seminar on Geometry and Animation — *University of Toronto*
Teaching Assistant, Substitute Lecturer — *Fall 2019*
Lead discussions on seminal research papers in graphics, assign marks for participation and quality

CSC 317/2504 - Computer Graphics — *University of Toronto*

Teaching Assistant, Substitute Lecturer — *Winter 2018 - Winter 2020*

Provided guidance to students working on the assignments, marked assignments and exams

CSC 320 - Introduction to Visual Computing — *University of Toronto*

Teaching Assistant — *Winter 2018*

Created marking schemes, marked assignments and exams

CSC 318 - Interactive Computational Media — *University of Toronto*

Teaching Assistant — *Fall 2017*

Created marking schemes, marked assignments and exams

Honors and Awards

Mitacs Globalink Research Award — *Mitacs*

Received, $6000 CAD — *2022*

Supports research collaborations with partner university to conduct a 12- to 24-week research project

Beatrice Worsley Graduate Scholarship in Computer Science — *University of Toronto*

Received, $4000 CAD — *2018*

Awarded to PhD students who have taken an active role in helping to promote women in the field of computer science

Grenoble INP Fondation Bourse d'Excellence Internationale — *Grenoble INP*

Received, €5000 EUR — *2016/2017*

Attract talented international students with strong academic and professional potential to engineering training at Grenoble INP

Fulbright Study/Research Fellowship — *Fulbright U.S. Student Program*

Semi-Finalist — *2016/2017*

Study/research grant to design a project to work on with advisers at foreign universities

James B. Maginnis Award — *Drexel University*

Received, $500 USD — *Winter 2016*

Presented to an upper division student majoring in computer science in recognition of academic excellence

SuperNova Undergraduate Research Fellow — *Drexel University*

Received — *2016*

Engaged in progressively demanding undergraduate research experiences, courses and projects

Franklin Institute Laureate Liaison — *Franklin Institute, Drexel University*

Received — *Fall 2017*

Liaison to visiting scholars (Edmund Clarke) recognized at the Franklin Institute

STAR Scholar Summer Research Program — *Drexel University*

Received, $4000 USD — *2013*

Students Tackling Advanced Research Program

Activities

Leadership

DCS Women — *University of Toronto*

Student Organizer — *September 2021 - August 2022*

Helped organize and run events for graduate students in the Department of Computer Science

University of Toronto Department of Computer Science — *University of Toronto*

Graduate Application Triager — *December 2021*

16 hours of paid work on processing graduate school applications

Symposium on Geometry Processing Conference — *Toronto, ON (remote)*

Student Volunteer — *July 2021*

Provided Zoom support, created and moderated the Discord server, and ran Trivia Night

HER CODE CAMP — *Affiliated with University of Toronto*

Director of Marketing, Director of Mentorship — *September 2019 - August 2020*

Helped organize Python workshops to high school students in the Toronto area who are women or non-binary

Mentoring Undergraduates & High School Students

Graduate Application Assistance Program — *University of Toronto*

Mentor — *October 2021 - present*

Advising undergraduate and masters students to improve their CVs and statements for grad school applications

Anqi Li — *University of Toronto*

Mentor — *April 2021 - present*

Mechanical engineering of large scale zoetropes

Cindy Zhu and Kevin Huang — *(visiting) Unionville High School*

Mentor — *April 2018 - June 2020*

Project on viewing meshes in VR
Cindy is now studying computer science at Carnegie Mellon University

Arjun Chhabra — *University of Toronto*

Engineering Science Summer Program Mentor — *June 2018 - September 2018*

Project on visualization tools for laser cutting
Arjun is now a Mechanical and Aerospace Engineering PhD Student at Princeton University

Undergraduate Research Leaders — *Drexel University*

Mentor — *September 2015 - June 2016*

Guided undergraduate students who wanted to be involved in research

Reviewing

Answer Set Programming and Other Computing Paradigms

Reviewer — *May 2015*

Practical Aspects of Declarative Languages

Subreviewer — *May 2015*

Memberships

ACM SIGGRAPH, Upsilon Pi Epsilon, University of Toronto DCS Women

Personal

I draw, paint, silkscreen, do gymnastics, and speak French. I also have two cute rabbits.