Curriculum Vitae – Tovi Grossman

A. BIOGRAPHICAL INFORMATION

1. PERSONAL

Tovi Grossman
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2. DEGREES

Ph.D. in Computer Science. 2008.
Department of Computer Science, University of Toronto.
Thesis Title: "Interaction with Volumetric Displays".
Advisor: Ravin Balakrishnan

M.Sc. in Computer Science. 2004.
Department of Computer Science, University of Toronto.
Thesis Title: "Alternate User Interfaces for 3D Curve Creation and Manipulation".
Advisor: Ravin Balakrishnan

B.Sc. Honours. Computer Science Major, Math Minor, Philosophy Minor. 2002.

3. EMPLOYMENT

2018 - Present *Associate Professor*
Alfred P. Sloan Research Fellow (2021)
NSERC E.W.R. Steacie Memorial Fellow (2020)
NSERC/Autodesk Industrial Research Chair in Human-Computer Interaction (2019-2024)
University of Toronto, Department of Computer Science

I currently hold a tenure-stream position in the Department of Computer Science at University of Toronto at the rank of Associate Professor. The University of Toronto Department of Computer Science is ranked as the top CS department in Canada and 10th globally. Responsibilities include: pursuing innovative research at the highest international level; establishing a strong, externally funded independent research program; having a strong commitment to undergraduate and graduate teaching; and contributing to the enrichment of both undergraduate and graduate programs in the computer science department.

2018 - 2023 *Distinguished Visiting Scientist at Autodesk Research*

Autodesk is a leader in 3D design, engineering and entertainment software. In Autodesk Research, they also have one of the world's leading industry research labs for HCI, Graphics, Design, and Fabrication research. My role as a Distinguished Visiting Scientist included keeping the research group and product teams up to date on current developments and research sounding Human-Computer Interaction and related technologies, providing guidance and advice to the research group members on their ongoing research activities, including student internship projects, providing guidance and advice to product teams on initiatives related to my areas of expertise, and making scientific presentations to different groups throughout the company.

2018 - 2020 *Science Advisor and Co-Founder at Chatham Labs*

Chatham Labs is an organization dedicated to inventing the future of human-computer interaction. Their team consists of computer science and engineering researchers, software architects, designers, and developers who invent, develop, and tech-transfer breakthrough solutions to its clients. As a co-founder and Science Advisor at Chatham Labs, I was responsible for guiding and directing scientific research initiatives at Chatham. This included keeping their group current on developments and research sounding Human-Computer Interaction and related technologies, providing guidance and advice on their ongoing research activities, including student internship projects, providing guidance and advice on commercialization efforts related to my areas of expertise, and providing guidance and advice and their growth, strategy, and recruiting efforts.

2008 – 2018 *Distinguished Research Scientist at Autodesk Research, Toronto, Canada.*
Group Directors: George Fitzmaurice, Gord Kurtenbach

Prior to becoming faculty at University of Toronto, I was a Distinguished Research Scientist within the Autodesk Research User Interface Research Group, leading research programs on software learnability, physical learning, and input and interaction for new technologies. These research programs led to an extensive publication record in top tier international venues. I also led and influenced the transfer of my research into a number of novel commercial technologies [C.22, C.25, C.65], and new standalone products [C.27, C.33, C.61], reaching millions of users worldwide. Finally, my role involved the management of the Autodesk Research Internship program for the User Interface Research Group, annually supervising 3-6 research interns, originating from top Canadian, American, and International institutions.

Jan-Apr 2007 *Research Internship at Microsoft Research, Redmond, USA*
Research Advisors: Ken Hinckley, Patrick Baudisch. Group Manager: Eric Horvitz

Working within The Adaptive Systems and Interaction group, I designed *Handle Flags*, a new technique used to select and perform commands on ink strokes in pen-operated interfaces. The work was published at the Graphics Interface conference [C.21] and patented by Microsoft.

Jan-Apr 2005 *Research Internship at Microsoft Research, Redmond, USA*
Research Advisor: Ken Hinckley. Group Manager: Eric Horvitz

This research internship was conducted within The Adaptive Systems and Interaction group. I designed *Hover Widgets*, a new technique for increasing the capabilities of pen-based interfaces, by using short gestures while hovering above the display surface. This work was published in the ACM CHI Conference [C.7] and patented by Microsoft.

2000 - 2001 *Undergraduate Research Assistant at Alias|wavefront, Toronto, Canada.*
Research Advisors: Gord Kurtenbach, Ravin Balakrishnan, Group Manager: Bill Buxton

Working in the Interactive Graphics Research Group, run by Bill Buxton, I developed a large-display system for the authoring of 2D and 3D curves based on the "tape drawing" interaction commonly used in automotive design. The resulting work led to two peer-reviewed full conference papers, and is often cited for the numerous novel interactions for large screen displays and 3D environments which it introduced [C.1, C.2].

4. HONOURS

2021 *Alfred P. Sloan Foundation Research Fellowship*
Awarded to 128 early-career scholars in the U.S. and Canada in recognition of distinguished performance and a unique potential to make substantial contributions to their field.

2020 *NSERC E.W.R. Steacie Memorial Fellowship*
Awarded to six top early-career researchers in Canada in science and engineering.

Graduate Fellowships and Scholarships

2008 *Natural Sciences and Engineering Research Council of Canada*
Post-Doctorate Fellowship (PDF), $80,000 over two years (declined).

2007 *Microsoft Corporation*
Microsoft Research Fellowship, $40,000 over two years.

2005 *Natural Sciences and Engineering Research Council of Canada*
Canada Graduate Scholarship (CGS-D) Award for Ph.D. studies, $70,000 over two years.

2002 *Natural Sciences and Engineering Research Council of Canada*
Postgraduate Scholarship (PGS-A) Award for M.Sc. studies, $38,000 over two years.

Publication Awards

UIST 2022 *Honorable Mention Award (Top 5%)*
SemanticOn: Specifying Content-Based Semantic Conditions for Web Automation Programs

CHI 2022 *Honorable Mention Award (Top 5%)*
immersivePOV: Filming How-To Videos with a Head-Mounted 360° Action Camera

CHI 2021 *Honorable Mention Award (Top 5%)*
"Grip-that-there": An Investigation of Explicit and Implicit Task Allocation Techniques for Human-Robot Collaboration

CHI 2019 *Best Paper Award (Top 1%)*
Geppetto: Enabling Semantic Design of Expressive Robot Behaviors

CHI 2016 *Honorable Mention Award (Top 5%)*
RetroFab: A Design Tool for Retrofitting Physical Interfaces using Actuators, Sensors and 3D Printing

CHI 2016 *Best Paper Award (Top 1%)*
The Effect of Visual Appearance on the Performance of Continuous Sliders and Visual Analogue Scales

CHI 2016 *Best Paper Award (Top 1%)*
Object-Oriented Drawing

CHI 2015 *Honorable Mention Award (Top 5%)*
Tactum: A Skin-Centric Approach to Digital Design and Fabrication.

CHI 2015 *Honorable Mention Award (Top 5%)*
Supporting Subtlety with Deceptive Devices and Illusory Interactions

CHI 2015 *Best Talk Award*
Supporting Subtlety with Deceptive Devices and Illusory Interactions

UIST 2014 *Best Talk Award*
Kitty: Sketching Dynamic and Interactive Illustrations

CHI 2014 *Honorable Mention Award (Top 5%)*
Draco: Bringing Life to Illustrations with Kinetic Textures

CHI 2014 *Best Talk Award*
Draco: Bringing Life to Illustrations with Kinetic Textures

CHI 2014 *Best Video Award*
Draco: Living Illustrations

CHI 2014 *Best Paper Award (Top 1%)*
Duet: Exploring Joint Interactions on a Smart Phone and a Smart Watch

CHI 2014 *Best Talk Award*
Duet: Exploring Joint Interactions on a Smart Phone and a Smart Watch

CHI 2014 *Honorable Mention Award (Top 5%)*
Investigating the Feasibility of Extracting Tool Demonstrations from In-Situ Video Content

IAAI 2014 *AAAI Innovative Application Award*
CommunityCommands: A Software Command Recommender System Case Study

GI 2013 *Best Student Paper Award*
A Model of Navigation for Very Large Data Views

CHI 2011 *Honorable Mention Award (Top 5%)*
Magic Desk: Bringing Multi-Touch Surfaces into Desktop Work

CHI 2010 *Honorable Mention Award (Top 5%)*
ToolClips: An Investigation of Contextual Video Assistance for Functionality Understanding

CHI 2010 *Honorable Mention Award (Top 5%)*
MouseLight: Bimanual Interactions on Digital Paper Using a Pen and a Spatially-Aware Mobile Projector

CHI 2009 *Honorable Mention Award (Top 5%)*
A Survey of Software Learnability: Metrics, Methodologies and Guidelines

CHI 2005 *Best Paper Award (Top 1%)*
The Bubble Cursor: Enhancing Target Acquisition by Dynamic Resizing Of the Cursor's Activation Area

UIST 2004 *Best Paper Award (Top 1%)*
Multi-Finger Gestural Interaction with 3D Volumetric Displays

Product Awards
Apple 2016 iPad App of the Year
Autodesk Sketchbook Motion

5. PROFESSIONAL AFFILIATIONS AND ACTIVITIES

2019- ACM CHI Conference on Human Factors in Computing Systems, Steering Committee Vice Chair
2018- ACM Senior Member

B. ACADEMIC HISTORY

6. RESEARCH ENDEAVOURS

A. Research Interests

My research lies in the general area of Human-Computer Interaction, with a primary focus on understanding how emerging technologies and machine intelligence can be leveraged to develop enhanced and compelling user experiences. Topics include: Intelligent User Interfaces; 3D User Interfaces; AR/VR Interaction; Computing Education and Support; Interactive Robotics; Mobile and Wearable Input; Pen and Touch Input; Interactive Help and Tutorials.

In addition to this work leading to an extensive international publication record, I have a strong passion for pursuing ways in which my research can have real-world impact. I have been involved in a number of successful transfers of my research leading to new technologies and products used by millions of users, such as Autodesk Screencast, Autodesk ToolClip™ videos, and Autodesk Sketchbook Motion.

B. Research Awards

2024 *University of Toronto Huawei Capacity Fund*
$50,000 over 1 year. Principal Investigator

2023 *University of Toronto Learning and Education Advancement Fund Plus (LEAF+) Program: Generative Artificial Intelligence in Teaching and Learning*
$10,000 over 1 year. Principal Investigator.
Deployment of LLM-based Personal Coding Assistants that Balance Helpfulness and Directness

2021 *Alfred P. Sloan Foundation Research Fellowship*
$75,000 (USD) over 2 years. Principal Investigator.
"Learning to Work With Intelligent Systems Through Interactive Technologies"

2020 *NSERC E.W.R. Steacie Memorial Fellowship*
$250,000 over 2 years. Principal Investigator.
"Interactive Techniques to Learn and Work with Automated Design and Fabrication Systems"

2020 *OCE Voucher for Innovation and Productivity (VIP)*
$300,000 over 1 year. Principal Investigator.
"Developing a User Interface Platform for Distributed Computational Environments"

2019 *NSERC/Autodesk Industrial Research Chair in Human-Computer Interaction*
$1,900,000 over 5 years. Principal Investigator.
"Hybrid Interactive Systems for Design and Fabrication"

2019 *University of Toronto Connaught New Researcher Award*
$20,000 over 2 years. Principal Investigator.
"Interactive Guidance for Large Scale and Collaborative Fabrication"

2019 *University of Toronto XSeed*
$120,000 over 2 years. Co-Investigator with Angela Schoellig (principal) and Florian Shkurti.
"Active and Sample-Efficient Robot Learning with Human Guidance: Algorithm Development and Robot Demonstrations"

2019 *NSERC Discovery Launch Supplement*
$12,500 over 1 year. Principal Investigator.
"Real-Time Guidance for Large-Scale Construction and Assembly Tasks"

2018 *Canada Foundation for Innovation (CFI) John R. Evans Leaders Fund*
$625,000 over 4 years. Co-Investigator with Syed Ishtiaque Ahmed (principal).
"Collaborative Mobile Interaction Workshop"

2018 *NSERC Discovery Grants Programs*
$265,000 over 5 years. Principal Investigator.
"Real-Time Guidance for Large-Scale Construction and Assembly Tasks"

2018 *University of Toronto Start-Up Funds*
$400,000 over 5 years. Principal Investigator.

C. Patents

[P.104] Opportunistic adaptive tangible user interfaces for use in extended reality environments. Stephanie Santosa, Frances Cin-Yee LAI, Michael Glueck, Daniel CLARKE, **Tovi Grossman**, Weilun Gong. Filed: 2023-09-01. Patent No. US-2024077986-A1.

[P.103] Navigation and view sharing system for remote collaboration. Frederik Brudy, Matthew K. Miller, **Tovi Grossman**, George William Fitzmaurice, Fraser Anderson. Filed: 2023-08-09. Patent No. EP-4322092-A1.

[P.102] Techniques for generating immersive spaces that enable inspirational materials to be collected, discovered, and envisioned. Alexander Arden IVANOV, Fraser ANDERSON, **Tovi Grossman**, David LEDO MAIRA, George Fitzmaurice. Filed: 2023-03-09. Patent No. US-2023393701-A1.

[P.101] Saccade-based positioning for radial user interface. Marcello GIORDANO, Mark Parent, Daniel John Wigdor, Stephanie Santosa, **Tovi Grossman**, Sunggeun Ahn. Filed: 2022-01-08. Patent No. WO-2022150668-A1.

[P.100] Multimodal kinematic template matching and regression modeling for ray pointing prediction in virtual reality. Rorik Henrikson, **Tovi Grossman**, Sean Edwin Trowbridge, Hrvoje Benko, Daniel John Wigdor, Marcello Giordano, Michael Glueck, Tanya Renee Jonker, Aakar Gupta, Stephanie Santosa, Carolina Brum Medeiros, Daniel CLARKE. Filed: 2022-01-05. Granted: 2023-05-23. Patent No. US-11656693-B2.

[P.99] SWITCHING BETWEEN STATES IN A HYBRID VIRTUAL REALITY DESKTOP COMPUTING ENVIRONMENT. Fraser ANDERSON, George Fitzmaurice, **Tovi Grossman**, Johann Wentzel. Filed: 2021-08-30. Patent No. DE-102021122362-A1.

[P.98] Artificial intelligence-based techniques for design generation in virtual environments. Fraser ANDERSON, Josh Davis, George Fitzmaurice, **Tovi Grossman**, Merten Stroetzel. Filed: 2021-08-24. Patent No. US-2022067228-A1.

[P.97] Reflection-based target selection on large displays with zero latency feedback. Fraser ANDERSON, **Tovi Grossman**, Justin Frank Matejka, George Fitzmaurice. Filed: 2021-07-30. Granted: 2024-03-05. Patent No. US-11921414-B2.

[P.96] Computer-based techniques for capturing knowledge about computer-based tasks. Fraser ANDERSON, George Fitzmaurice, **Tovi Grossman**, Rebecca Paige KROSNICK, Walter Lasecki, Justin Frank Matejka, Steve ONEY. Filed: 2021-03-24. Patent No. US-2021304019-A1.

[P.95] Computer-based techniques for obtaining personalized assistance with software applications. Fraser ANDERSON, George Fitzmaurice, **Tovi Grossman**, Nikhita JOSHI, Justin Frank Matejka. Filed: 2021-03-05. Granted: 2023-06-13. Patent No. US-11677691-B2.

[P.94] Techniques for analyzing the proficiency of users of software applications in real-time. Justin Frank Matejka, Fraser ANDERSON, George Fitzmaurice, **Tovi Grossman**, Warren Karl SCHREY, Christian SMITHERMAN. Filed: 2020-10-13. Patent No. US-2021152648-A1.

[P.93] Remote interaction via bi-directional mixed-reality telepresence. Fraser ANDERSON, Bala Thoravi KUMARAVEL, **Tovi Grossman**, George Fitzmaurice, Bjoern HARTMANN. Filed: 2020-06-16. Granted: 2022-09-13. Patent No. US-11442685-B2.

[P.92] Techniques for workflow analysis and design task optimization. **Tovi Grossman**, George Fitzmaurice, Benjamin Lafreniere, Juho Kim, Minsuk CHANG, Kaveh HASSANI. Filed: 2020-04-30. Patent No. EP-3963499-A1.

[P.91] Trigger-action-circuits: leveraging generative design to enable novices to design and build circuitry. Fraser ANDERSON, **Tovi Grossman**, George Fitzmaurice. Filed: 2020-01-10. Granted: 2021-09-07. Patent No. US-11113439-B2.

[P.90] Techniques for analyzing the proficiency of users of software applications. **Tovi Grossman**, Alexandra R. BERGIN, Benjamin Lafreniere, Michael Sturtz, Jaime A. PERKINS, Adam L. MENTER, Howard R. SWEARER, George Fitzmaurice, Justin Frank Matejka, Ji In Shin, William SABRAM, Michael L. Mcmanus. Filed: 2019-10-22. Patent No. WO-2020086596-A3.

[P.89] Head-coupled kinematic template matching for predicting 3D ray cursors. Rorik Henrikson, **Tovi Grossman**, Sean Trowbridge, Hrvoje Benko, Daniel Wigdor. Filed: 2019-09-04. Granted: 2020-11-03. Patent No. US-10824247-B1.

[P.88] Techniques for tailoring fabrication environments based on user, task, and expertise. Jun Gong, Fraser ANDERSON, George Fitzmaurice, **Tovi Grossman**. Filed: 2019-08-09. Patent No. US-2020279205-A1.

[P.87] Three-dimensional generative design based on two-dimensional sketching. Hyunmin CHEONG, George Fitzmaurice, **Tovi Grossman**, Rubaiat Habib KAZI, Ali BARADARAN HASHEMI. Filed: 2019-07-23. Granted: 2021-09-07. Patent No. US-11113865-B2.

[P.86] Skin-based approach to virtual modeling. Madeline GANNON, **Tovi Grossman**, George Fitzmaurice. Filed: 2019-07-12. Granted: 2021-11-02. Patent No. US-11163158-B2.

[P.85] TECHNIQUES FOR VISUALIZATION AND PROBING OF LARGE-VOLUME GENERATIVE DESIGN DATA SETS. **Tovi Grossman**, Erin BRADNER, George Fitzmaurice, Ali BARADARAN HASHEMI, Michael Glueck, Justin Frank Matejka. Filed: 2019-04-23. Patent No. DE-112019002095-T5.

[P.84] Computer-aided techniques for iteratively generating designs. Benjamin LAFRENIERE, **Tovi Grossman**, Ariel WEINGARTEN, George Fitzmaurice. Filed: 2019-01-24. Patent No. US-2020242201-A1.

[P.83] Techniques for classifying and recommending software workflows. **Tovi Grossman**, Benjamin LAFRENIERE, Xu Wang. Filed: 2019-01-14. Granted: 2023-11-21. Patent No. US-11823015-B2.

[P.82] Real-time orchestration for software learning workshops. **Tovi Grossman**, Benjamin LAFRENIERE, George Fitzmaurice, Volodymyr DZIUBAK, Andrea BUNT. Filed: 2019-01-04. Patent No. US-2019213912-A1.

[P.81] Cross-application interface that facilitates software application training. Benjamin LAFRENIERE, **Tovi Grossman**. Filed: 2018-10-10. Granted: 2023-05-09. Patent No. US-11645942-B2.

[P.80] Computer-aided techniques for designing detailed three-dimensional objects. Karansher Singh, **Tovi Grossman**, Kazi Rubaiat Habib, George Fitzmaurice, Rahul Arora. Filed: 2018-10-09. Granted: 2021-07-27. Patent No. US-11074747-B2.

[P.79] Generative design techniques for robot behavior. Fraser ANDERSON, Stelian Coros, Ruta DESAI, **Tovi Grossman**, Justin Frank Matejka, George Fitzmaurice. Filed: 2018-09-18. Patent No. US-2020030988-A1.

[P.78] Haptic device for mixed reality environments. Fraser ANDERSON, **Tovi Grossman**, Teng Han, Pourang Polad Irani. Filed: 2018-08-30. Granted: 2020-07-14. Patent No. US-10713907-B2.

[P.77] Tutorial-based techniques for building computing systems. **Tovi Grossman**, Jeremy WARNER, George Fitzmaurice, Benjamin LAFRENIERE. Filed: 2018-07-31. Granted: 2022-08-23. Patent No. US-11423801-B2.

[P.76] Always-available input through finger instrumentation. Xing-Dong Yang, **Tovi Grossman**, Daniel Wigdor, George Fitzmaurice. Filed: 2018-03-20. Granted: 2024-01-30. Patent No. US-11886667-B2.

[P.75] Techniques for designing interactive objects with integrated smart devices. **Tovi Grossman**, Fraser ANDERSON, Ryan Michael SCHMIDT, Saul GREENBERG, David LEDO. Filed: 2018-01-05. Patent No. US-2018196889-A1.

[P.74] Automated distribution of subtask assignments to user devices. **Tovi Grossman**, George Fitzmaurice, Cristin Ailie FRASER. Filed: 2018-01-04. Patent No. US-2018197131-A1.

[P.73] Three dimensional visual programming interface for a network of devices. Barrett Ens, Fraser ANDERSON, George Fitzmaurice, **Tovi Grossman**. Filed: 2017-09-27. Granted: 2023-11-07. Patent No. US-11809678-B2.

[P.72] Animating sketches via kinetic textures. **Tovi Grossman**, George Fitzmaurice, Rubaiat Habib KAZI, Fanny CHEVALIER, Shengdong Zhao. Filed: 2017-08-14. Patent No. US-2017345202-A1.

[P.71] Techniques for transitioning from a first navigation scheme to a second navigation scheme. **Tovi Grossman**, Benjamin LAFRENIERE. Filed: 2017-08-11. Granted: 2022-10-18. Patent No. US-11474660-B2.

[P.70] Techniques for transitioning from a first navigation scheme to a second navigation scheme. **Tovi Grossman**, Benjamin LAFRENIERE. Filed: 2017-08-11. Granted: 2021-05-18. Patent No. US-11010014-B2.

[P.69] No-handed smartwatch interaction techniques. Seongkook Heo, George Fitzmaurice, Benjamin LAFRENIERE, **Tovi Grossman**. Filed: 2017-07-14. Granted: 2022-03-01. Patent No. US-11262850-B2.

[P.68] Techniques for processing and viewing video events using event metadata. Justin Frank Matejka, George Fitzmaurice, **Tovi Grossman**. Filed: 2017-05-08. Patent No. US-2017243614-A1.

[P.67] Techniques for generating dynamic effects animations. Jun XING, Rubaiat Habib KAZI, **Tovi Grossman**, Li-Yi Wei, Jos Stam, George Fitzmaurice. Filed: 2017-02-23. Patent No. US-2018082460-A1.

[P.66] Techniques for on-body fabrication of wearable objects. **Tovi Grossman**, George Fitzmaurice, Madeline GANNON. Filed: 2017-01-13. Granted: 2022-11-22. Patent No. US-11507039-B2.

[P.65] Automated techniques for retrofitting devices. **Tovi Grossman**, George Fitzmaurice, Fraser ANDERSON, Raf RAMAKERS. Filed: 2017-01-13. Patent No. US-2017205807-A1.

[P.64] Automated supervision of construction operations in an intelligent workspace. **Tovi Grossman**, George Fitzmaurice, Anderson Nogueira, Nick Beirne, Justin Frank Matejka, Danil Nagy, Steven Li, Benjamin LAFRENIERE, Heather Kerrick, Thomas White, Fraser ANDERSON, Evan Atherton, David Thomasson, Arthur Harsuvanakit, Maurice Ugo Conti. Filed: 2016-11-22. Patent No. US-2017148116-A1.

[P.63] Automated techniques for designing programmed electronic devices. **Tovi Grossman**, George Fitzmaurice, Fraser ANDERSON. Filed: 2016-10-11. Patent No. US-2017147718-A1.

[P.62] Banded sliders for obtaining values from users. Justin Frank Matejka, Michael Glueck, **Tovi Grossman**, George Fitzmaurice. Filed: 2016-09-27. Patent No. US-2018088790-A1.

[P.61] Sharing computer application activities. **Tovi Grossman**, George Fitzmaurice, Justin Frank Matejka, Barrett Ens, Fraser ANDERSON. Filed: 2016-06-15. Patent No. US-2017034228-A1.

[P.60] Enhancing input on small displays with a finger mounted stylus. **Tovi Grossman**, George Fitzmaurice, Haijun Xia. Filed: 2016-05-06. Patent No. US-2017031468-A1.

[P.59] Techniques for generating dynamic illustrations using principles of animation. Rubiait Habib, **Tovi Grossman**, Nobuyuki Umetani, George Fitzmaurice. Filed: 2016-04-19. Granted: 2020-03-31. Patent No. US-10607387-B2.

[P.58] Techniques for generating dynamic illustrations using principles of animation. Rubiait Habib, **Tovi Grossman**, Nobuyuki Umetani, George Fitzmaurice. Filed: 2016-04-19. Granted: 2019-09-03. Patent No. US-10403020-B2.

[P.57] Smart tools and workspaces for do-it-yourself tasks. **Tovi Grossman**, George Fitzmaurice, Jarrod Knibbe. Filed: 2015-12-14. Granted: 2018-12-04. Patent No. US-10147236-B2.

[P.56] Techniques for interacting with wearable devices. **Tovi Grossman**, Xiang Anthony CHEN, George Fitzmaurice. Filed: 2015-08-21. Patent No. US-2017052700-A1.

[P.55] Techniques for generating motion sculpture models for three-dimensional printing. **Tovi Grossman**, Ryan Michael SCHMIDT, Rubaiat HABIB, Cory MOGK, George Fitzmaurice. Filed: 2015-07-28. Granted: 2020-04-14. Patent No. US-10620610-B2.

[P.54] Graphical interface for editing an interactive dynamic illustration. Rubaiat Habib KAZI, **Tovi Grossman**, George Fitzmaurice, Fanny CHEVALIER. Filed: 2015-06-19. Granted: 2019-01-29. Patent No. US-10193959-B2.

[P.53] Generating tubes within three-dimensional models. Valkyrie Savage, **Tovi Grossman**, George Fitzmaurice, BjÃ¶rn Hartmann, Ryan Michael SCHMIDT. Filed: 2015-06-19. Patent No. US-2015370926-A1.

[P.52] Preloading and switching streaming videos. Justin Frank Matejka, George Fitzmaurice, **Tovi Grossman**. Filed: 2015-06-03. Patent No. US-2016360262-A1.

[P.51] Chronological event information for multimedia content. Justin Frank Matejka, **Tovi Grossman**, George Fitzmaurice. Filed: 2015-06-03. Granted: 2019-06-11. Patent No. US-10320866-B2.

[P.50] Generating informative viewpoints based on editing history. Hsiang-Ting Chen, **Tovi Grossman**, Wei LI-YI, Ryan Michael SCHMIDT, Bjoern HARTMANN, George Fitzmaurice, Maneesh Agrawala. Filed: 2015-04-27. Granted: 2017-09-05. Patent No. US-9754421-B2.

[P.49] Techniques for cut-away stereo content in a stereoscopic display. **Tovi Grossman**, George Fitzmaurice, Natalia Bogdan. Filed: 2015-02-13. Patent No. US-2015235409-A1.

[P.48] Flip-up stereo viewing glasses. **Tovi Grossman**, George Fitzmaurice, Natalia Bogdan. Filed: 2015-02-13. Patent No. US-2015237338-A1.

[P.47] Techniques for animating transitions between non-stereoscopic and stereoscopic imaging. **Tovi Grossman**, George Fitzmaurice, Natalia Bogdan. Filed: 2015-02-12. Patent No. US-2015228102-A1.

[P.46] Techniques for integrating different forms of input with differentforms of output when interacting with an application. **Tovi Grossman**, George Fitzmaurice, Natalia Bogdan. Filed: 2015-02-12. Patent No. US-2015245005-A1.

[P.45] In-product micro-blogging for design sharing. Wei H. Li, **Tovi Grossman**, Justin Frank Matejka, George Fitzmaurice. Filed: 2015-02-02. Patent No. US-2015149576-A1.

[P.44] Techniques for authoring view points, view paths, and view surfaces for 3D models. Hsiang-Ting Chen, **Tovi Grossman**, Wei LI-YI, Ryan Michael SCHMIDT, Bjoern HARTMANN, George Fitzmaurice, Maneesh Agrawala. Filed: 2014-12-04. Granted: 2019-05-14. Patent No. US-10289289-B2.

[P.43] Techniques for interacting with handheld devices. **Tovi Grossman**, Xiang Anthony CHEN, George Fitzmaurice. Filed: 2014-12-04. Patent No. US-2015153952-A1.

[P.42] Extracting demonstrations from in-situ video content. Benjamin LAFRENIERE, **Tovi Grossman**, Justin Frank Matejka, George Fitzmaurice. Filed: 2014-12-04. Granted: 2021-06-22. Patent No. US-11042274-B2.

[P.41] Techniques for viewing and searching documents from collections of documents. Justin Frank Matejka, George Fitzmaurice, **Tovi Grossman**. Filed: 2014-11-14. Granted: 2020-06-23. Patent No. US-10694071-B2.

[P.40] Recommendation system for protecting user privacy. Wei Li, Justin Frank Matejka, **Tovi Grossman**, George Fitzmaurice. Filed: 2014-07-16. Granted: 2016-12-27. Patent No. US-9530024-B2.

[P.39] Enhancing movement training with an augmented reality mirror. Fraser ANDERSON, **Tovi Grossman**, Justin Frank Matejka, George Fitzmaurice. Filed: 2014-06-26. Granted: 2018-11-20. Patent No. US-10134296-B2.

[P.38] Adapting video annotations to playback speed. George Frank FITZMAURICE, **Tovi Grossman**, Justin Frank Matejka. Filed: 2013-07-25. Granted: 2021-01-12. Patent No. US-10891428-B2.

[P.37] Techniques for representing and comparing workflows. **Tovi Grossman**, Maneesh Agrawala, Nicholas KONG, George Fitzmaurice. Filed: 2013-05-02. Patent No. US-2013311927-A1.

[P.36] Server side video screen capture. **Tovi Grossman**, George Fitzmaurice. Filed: 2013-04-26. Granted: 2017-11-21. Patent No. US-9826024-B2.

[P.35] Community enhanced tutorials: improving tutorials with multiple demonstrations. Benjamin LAFRENIERE, **Tovi Grossman**, George Fitzmaurice. Filed: 2013-04-16. Granted: 2017-05-30. Patent No. US-9665234-B2.

[P.34] Real-time scrubbing of videos using a two-dimensional grid of thumbnail images. Justin Frank Matejka, **Tovi Grossman**, George Fitzmaurice. Filed: 2013-04-10. Patent No. US-2014310601-A1.

[P.33] Implanted devices and related user interfaces. **Tovi Grossman**, George Fitzmaurice, Anne Agur, Christian Holz. Filed: 2012-12-14. Patent No. US-2013176207-A1.

[P.32] Web-based system for capturing and sharing instructional material for a software application. **Tovi Grossman**, George Fitzmaurice, Justin Frank Matejka, Thomas White, Ara Danielyan, Ruslana Steininger, Michael Chen, Anderson Nogueira. Filed: 2012-12-05. Granted: 2019-12-24. Patent No. US-10515143-B2.

[P.31] Enhanced target selection for a touch-based input enabled user interface. **Tovi Grossman**, George Fitzmaurice, Xing-Dong YANG, Pourang Polad IRANI. Filed: 2012-10-12. Patent No. WO-2013055997-A1.

[P.30] Proximity-aware multi-touch tabletop. Michelle Annett, **Tovi Grossman**, Daniel Wigdor, George Fitzmaurice. Filed: 2012-10-12. Patent No. US-2013100057-A1.

[P.29] Computer-implemented tutorial for visual manipulation software. Jennifer FERNQUIST, **Tovi Grossman**, Mark Davis, George Fitzmaurice. Filed: 2012-10-12. Granted: 2017-10-31. Patent No. US-9805482-B2.

[P.28] Real-time scrubbing of online videos. Justin Frank Matejka, **Tovi Grossman**, George Fitzmaurice. Filed: 2012-10-12. Patent No. US-2018129407-A9.

[P.27] In-product questions, answers, and tips. Justin Frank Matejka, **Tovi Grossman**, George Fitzmaurice. Filed: 2012-10-11. Granted: 2015-09-22. Patent No. US-9141253-B2.

[P.26] Displaying resources based on shared contexts. George Fitzmaurice, **Tovi Grossman**, Justin Frank Matejka, Wei Li. Filed: 2012-09-05. Granted: 2014-05-06. Patent No. US-8719204-B2.

[P.25] Systems and methods for visualizing relationships between publications. Justin Frank Matejka, **Tovi Grossman**, George Fitzmaurice. Filed: 2012-06-21. Patent No. US-2013346900-A1.

[P.24] Hierarchical display and navigation of document revision histories. **Tovi Grossman**, Justin Frank Matejka, George Fitzmaurice. Filed: 2012-04-17. Patent No. WO-2012145324-A1.

[P.23] Method of providing instructional material while a software application is in use. Justin Frank Matejka, **Tovi Grossman**, George Fitzmaurice. Filed: 2012-04-05. Patent No. WO-2013006221-A1.

[P.22] Context-aware search. Michael D Ekstrand, Wei Li, **Tovi Grossman**, Justin Frank Matejka, George Fitzmaurice. Filed: 2012-03-16. Patent No. EP-2686792-A4.

[P.21] Multi-touch integrated desktop environment. **Tovi Grossman**, Justin Frank Matejka, George Fitzmaurice, Xiaojun Bi. Filed: 2012-01-05. Patent No. EP-2661671-A4.

[P.20] Visualizing user interfaces. **Tovi Grossman**, George William Fitzmaurice, Michael Rooke. Filed: 2011-09-01. Patent No. US-2012054653-A1.

[P.19] Multiscale three-dimensional orientation. **Tovi Grossman**, Azam Khan, Michael Glueck, James Mccrae. Filed: 2011-07-29. Patent No. EP-2598982-A4.

[P.18] Hierarchical display and navigation of document revision histories. **Tovi Grossman**, Justin Frank Matejka, George Fitzmaurice. Filed: 2011-04-19. Granted: 2013-09-10. Patent No. US-8533594-B2.

[P.17] Hierarchical display and navigation of document revision histories. **Tovi Grossman**, Justin Frank Matejka, George Fitzmaurice. Filed: 2011-04-19. Patent No. US-2012272192-A1.

[P.16] Hierarchical display and navigation of document revision histories. **Tovi Grossman**, Justin Frank Matejka, George Fitzmaurice. Filed: 2011-04-19. Patent No. US-2012272153-A1.

[P.15] Hierarchical display and navigation of document revision histories. **Tovi Grossman**, Justin Frank Matejka, George Fitzmaurice. Filed: 2011-04-19. Patent No. US-2012272173-A1.

[P.14] Multi-touch marking menus and directional chording gestures. George Fitzmaurice, **Tovi Grossman**, Gerard Julian Lepinski. Filed: 2011-03-25. Patent No. EP-2553559-A4.

[P.13] Bimanual interactions on digital paper using a pen and a spatially-aware mobile projector. Hyunyoung SONG, Francois V. GUIMBRETIERE, **Tovi Grossman**, George Fitzmaurice. Filed: 2011-03-03. Patent No. US-9513716-B2.

[P.12] Multi-Touch Integrated Desktop Environment. **Tovi Grossman**, Justin Frank Matejka, George Fitzmaurice, Xiaojun Bi. Filed: 2011-01-05. Patent No. US-2012169598-A1.

[P.11] Multi-touch integrated desktop environment. **Tovi Grossman**, Justin Frank Matejka, George Fitzmaurice, Xiaojun Bi. Filed: 2011-01-05. Patent No. US-8988366-B2.

[P.10] Multi-touch integrated desktop environment. **Tovi Grossman**, Justin Frank Matejka, George Fitzmaurice, Xiaojun Bi. Filed: 2011-01-05. Patent No. US-9262005-B2.

[P.9] Method and system for providing data-related information and videos to software application end-users. **Tovi Grossman**, George Fitzmaurice. Filed: 2010-10-25. Patent No. US-2011099475-A1.

[P.8] Method and System for Providing Software Application End-Users with Contextual Access to Text and Video Instructional Information. **Tovi Grossman**, George Fitzmaurice. Filed: 2010-08-03. Patent No. US-2011099474-A1.

[P.7] Method and System for Providing Custom Tooltip Messages. George Fitzmaurice, **Tovi Grossman**, Wei Li, Justin Frank Matejka. Filed: 2010-06-21. Patent No. US-2011314415-A1.

[P.6] Spatially-aware projection pen display. Hyunyoung SONG, **Tovi Grossman**, George Fitzmaurice, Francois V. GUIMBRETIERE, Azam Khan, Ramtin ATTAR, Gordon Kurtenbach. Filed: 2009-08-06. Patent No. US-9323422-B2.

[P.5] Multi-finger mouse emulation. Justin Frank Matejka, **Tovi Grossman**, Jessica Lo, George Fitzmaurice. Filed: 2009-06-29. Patent No. US-8462134-B2.

[P.4] Parallel computation of computationally expensive parameter changes. Jeff Kowalski, Mark Davis, Jose Madeira de Freitas Garcia, **Tovi Grossman**, George Fitzmaurice. Filed: 2009-03-24. Patent No. US-8248428-B2.

[P.3] Handle flags. **Tovi Grossman**, Patrick M Baudisch, Kenneth P Hinckley, William A S Buxton, Raman Sarin. Filed: 2008-09-30. Patent No. TW-I456492-B.

[P.2] Representing animation as a static image on a graphical user interface. Daniel Robbins, Desney Tan, George Robertson, Kenneth Hinckley, Maneesh Agrawala, Patrick Baudish, Steven Drucker, **Tovi Grossman**. Filed: 2006-01-04. Patent No. US-2007153006-A1.

[P.1] Hover widgets: using the tracking state to extend capabilities of pen-operated devices. **Tovi Grossman**, Kenneth Hinckley, Patrick Baudisch, Maneesh Agrawala. Filed: 2005-10-07. Patent No. US-2006267966-A1.

C. SCHOLARLY AND PROFESSIONAL WORK

Career Publication Count (h-index = 65)	
Refereed Journals Articles	7
Refereed Magazines Articles	2
Full Papers in Refereed Conferences	160
Short Papers in Refereed Conferences	3
Chapters in Books	3
Other Conference Abstracts/Posters/Contributions	11

7. REFEREED PUBLICATIONS

A. Articles

Journal Articles

[J.7] Stan Nowak, Ben Aseniero, Lyn Bartram, **Tovi Grossman**, George Fitzmaurice, Justin Matejka. 2023 - in press. Identifying Visualization Opportunities to Help Architects Manage the Complexity of Building Codes. *IEEE Computer Graphics and Applications (CGA).* 43, 6 (Nov-Dec 2023), 75-86.

[J.6] Ludwig Sidenmark, Mark Parent, Chi-Hao Wu, Joannes Chan, Michael Glueck, Daniel Wigdor, **Tovi Grossman**, Marcello Giordano. 2022. Weighted Pointer: Error-aware Gaze-based Interaction through Fallback Modalities. *ISMAR 2022 Special Issue of the IEEE Transactions on Visualization and Computer Graphics (TVCG).* 28, 11 (November 2022), 3585-3595.

[J.5] Michelle Annett, **Tovi Grossman**, Daniel Wigdor, George Fitzmaurice. (2019). Exploring and Understanding the Role of Workshop Environments in Personal Fabrication Processes. *ACM Transactions on Computer-Human Interaction - Special Issue on Human-Building Interaction*. 26, 2 (April 2019), Article No. 10. 43 Pages.

[J.4] **Tovi Grossman** and George Fitzmaurice. 2015. An Investigation of Metrics For the in-situ Detection of Software Expertise. *Human Computer Interaction*. 30, 1 (January 2015), 64-102.

[J.3] Wei Li, Justin Matejka, **Tovi Grossman**, Joe Konstan and George Fitzmaurice. 2011. Design and Evaluation of a Command Recommendation System for Software Applications. *ACM Transactions on Computer-Human Interaction*. 18, 2 (June 2011), Article 6, 6:1-6:35.

[J.2] Lode Vanacken, **Tovi Grossman** and Karin Coninx. 2009. Multimodal Selection Techniques for Dense and Occluded 3D Virtual Environments. *International Journal of Human-Computer Studies.* 67, 3 (March 2009), 237-255.

[J.1] **Tovi Grossman** and Ravin Balakrishnan. 2005. A Probabilistic Approach to Modeling Two-Dimensional Pointing. *ACM Transactions on Computer-Human Interaction*, 12(3). p. 435-459.

Refereed Magazine Articles

[M.2] Jonathan Lazar, Elizabeth F. Churchill, **Tovi Grossman**, Gerrit Van der Veer, Philippe Palanque, John "Scooter" Morris, Jen Mankoff. 2017. Making the Field of Computing More Inclusive. *Communications of the ACM*. 60(3), 50-59.

[M.1] **Tovi Grossman**, Fanny Chevalier, Rubaiat Habib Kazi. 2016. Bringing research articles to life with animated figures. *ACM Interactions*. 23, 4 (June 2016), 52-57.

Conference Full Papers (Fully Refereed)

[C.160] Majeed Kazemitabaar, Runlong Ye, Xiaoning Wang, Austin Henley, Paul Denny, Michelle Craig, **Tovi Grossman**. 2024 - In Press. CodeAid: Evaluating a Classroom Deployment of an LLM-based Programming Assistant that Balances Student and Educator Needs. *ACM CHI Conference on Human Factors in Computing Systems*. 29 Pages. [26% acceptance rate]

[C.159] Fengyuan Zhu, Mauricio Sousa, Ludwig Sidenmark, **Tovi Grossman**. 2024 - In Press. PhoneInVR: An Evaluation of Spatial Anchoring and Interaction Techniques for Smartphone Usage in Virtual Reality. *ACM CHI Conference on Human Factors in Computing Systems*. 24 Pages. [26% acceptance rate]

[C.158] Mohi Reza, Nathan M Laundry, Ilya Musabirov, Peter Dushniku, Zhi Yuan "Michael" Yu, Kashish Mittal, **Tovi Grossman**, Michael Liut, Anastasia Kuzminykh, Joseph Jay Williams. 2024 - In Press. ABScribe: Rapid Exploration & Organization of Multiple Writing Variations in Human-AI Co-Writing Tasks using Large Language Models. *ACM CHI Conference on Human Factors in Computing Systems*. 26 Pages. [26% acceptance rate]

[C.157] Johann Wentzel, Fraser Anderson, George Fitzmaurice, **Tovi Grossman**, Daniel Vogel. 2024 - In Press. SwitchSpace: Understanding Context-Aware Peeking Between VR and Desktop Interfaces. *ACM CHI Conference on Human Factors in Computing Systems*. 24 Pages. [26% acceptance rate]

[C.156] Shan Xu, Sarah Sykes, Parastoo Abtahi, **Tovi Grossman**, Daylon Walden, Michael Glueck, Carine Rognon. 2024 - In Press. Designing Haptic Feedback for Sequential Gestural Inputs. *ACM CHI Conference on Human Factors in Computing Systems*. 17 Pages. [26% acceptance rate]

[C.155] Jiahao Nick Li, Yan Xu, **Tovi Grossman**, and Stephanie Santosa, Michelle Li. 2024 - In Press. OmniActions: Predicting Digital Actions in Response to Real-World Multimodal Sensory Inputs with LLMs. *ACM CHI Conference on Human Factors in Computing Systems*. 22 Pages. [26% acceptance rate]

[C.154] Stephen Brade, Bryan Wang, Mauricio Sousa, Gregory Lee Newsome, Sageev Oore, **Tovi Grossman**. 2024 - In Press. SynthScribe: Deep Multimodal Tools for Synthesizer Sound Retrieval and Exploration. *ACM Conference on Intelligent User Interfaces.* 15 Pages. [20% first round acceptance rate]

[C.153] Majeed Kazemitabaar, Xinying Hou, Austin Henley, Barbara Ericson, David Weintrop and **Tovi Grossman**. 2023. How Novices Use LLM-based Code Generators to Solve CS1 Coding Tasks in a Self-Paced Learning

Environment. *ACM Koli Calling International Conference on Computing Education Research.* Article 3, 1-12. [32% acceptance rate]

[C.152] Fengyuan Zhu, Ludwig Sidenmark, Mauricio Sousa, **Tovi Grossman**. 2023. PinchLens: Applying Spatial Magnification and Adaptive Control Display Gain for Precise Selection in Virtual Reality. *IEEE ISMAR International Symposium on Mixed and Augmented Reality*. 1221-1230. [32% acceptance rate]

[C.151] Tica Lin, Ben Lafreniere, Yan Xu, **Tovi Grossman**, Daniel Wigdor, Michael Glueck. 2023. XR Input Error Mediation for Hand-Based Input: Task and Context Influences a User's Preference. *IEEE ISMAR International Symposium on Mixed and Augmented Reality*. 1006-1015. [32% acceptance rate]

[C.150] Laura Chen, Marcello Giordano, Hrvoje Benko, **Tovi Grossman**, Stephanie Santosa. 2023. GazeRayCursor: Facilitating Virtual Reality Target Selection by Blending Gaze and Controller Raycasting. *ACM VRST Symposium on Virtual Reality Software and Technology*. Article 19. 1-11. [26% acceptance rate]

[C.149] Stephen Brade, Bryan Wang, Mauricio Sousa, Sageev Oore, **Tovi Grossman**. 2023. Promptify: Text-to-Image Generation through Interactive Prompt Exploration with Large Language Models. *ACM UIST Symposium on User Interface Software and Technology*. Article 96. 1-14. [25% acceptance rate]

[C.148] Kevin Pu, Mr Jim Yang, Angel Yuan, Minyi Ma, Rui Dong, Xinyu Wang, Yan Chen, **Tovi Grossman**. 2023. DiLogics: Creating Web Automation Programs with Diverse Logics. *ACM UIST Symposium on User Interface Software and Technology*. Article 74. 1-15. [25% acceptance rate]

[C.147] Sean Liu, Rorik Henrikson, **Tovi Grossman**, Michael Glueck, Mark Parent. 2023. RadarVR: Exploring Spatiotemporal Visual Guidance in Cinematic VR. *ACM UIST Symposium on User Interface Software and Technology*. Article 86. 1-14. [25% acceptance rate]

[C.146] Taejun Kim, Amy Karlson, Aakar Gupta, **Tovi Grossman**, Jason Wu, Parastoo Abtahi, Christopher Collins, Michael Glueck, Hemant Surale. 2023. STAR: Smartphone-analogous Typing in Augmented Reality. *ACM UIST Symposium on User Interface Software and Technology*. Article 116. 1-13. [25% acceptance rate]

[C.145] Weilun Gong, Stephanie Santosa, **Tovi Grossman**, Michael Glueck, Daniel Clarke, and Frances Lai. 2023. Affordance-Based and User-Defined Gestures for Spatial Tangible Interaction. *In Proceedings of the 2023 ACM Designing Interactive Systems Conference (DIS '23).* Association for Computing Machinery, New York, NY, USA, 1500–1514. [24% acceptance rate]

[C.144] Majeed Kazemitabaar, Justin Chow, Carl Ka To Ma, Barbara J. Ericson, David Weintrop, **Tovi Grossman**. 2023. Studying the Effect of AI Code Generators on Supporting Learners in Introductory Programming. *ACM CHI Conference on Human Factors in Computing Systems.* Article 455. 1-23. [28% acceptance rate]

[C.143] Jiannan Li, Mauricio Sousa, Karthik Mahadevan, Bryan Wang, Paula Akemi Aoyagui, Nicole Yu, Angela Yang, Ravin Balakrishnan, Anthony Tang, **Tovi Grossman**. 2023. Stargazer: An Interactive Camera Robot for Capturing How-To Videos Based on Subtle Instructor Cues. *ACM CHI Conference on Human Factors in Computing Systems.* Article 800. 1-16. [28% acceptance rate]

[C.142] Karthik Mahadevan, Qian Zhou, George Fitzmaurice, **Tovi Grossman**, Fraser Anderson. 2023. Tesseract: Querying Spatial Design Recordings by Manipulating Worlds in Miniature. *ACM CHI Conference on Human Factors in Computing Systems.* Article 460. 1-16. [28% acceptance rate]

[C.141] Sixuan Wu, Jiannan Li, Mauricio Sousa, **Tovi Grossman**. 2023. Investigating Guardian Awareness Techniques to Promote Safety in Virtual Reality. *IEEE Conference on Virtual Reality and 3D User Interfaces.* 10 Pages. [21% acceptance rate]

[C.140] Eve Mingxiao Li, Anran Qi, Mauricio Sousa, and **Tovi Grossman**. 2023. EnchantedBrush: Animating in Mixed Reality for Storytelling and Communication. *ACM GI Graphics Interface Conference.* 10 Pages. [57% acceptance rate]

[C.139] Matthew K Miller, Frederik Brudy, **Tovi Grossman**, George W. Fitzmaurice, Fraser Anderson. 2023. Peek-At-You: An Awareness, Navigation, and View Sharing System for Remote Collaborative Content Creation. *ACM GI Graphics Interface Conference*. 14 Pages. [57% acceptance rate]

[C.138] Amir Hosein Jahanlou, Jo Vermeulen, **Tovi Grossman**, Parmit Chilana, George Fitzmaurice, Justin Matejka. 2023. Task-Centric Application Switching: How and Why Knowledge Workers Switch Software Applications for a Single Task. *ACM GI Graphics Interface Conference*. 10 Pages. [57% acceptance rate]

[C.137] Majeed Kazemitabaar, Viktar Chyhir, David Weintrop, **Tovi Grossman**. 2023. Scaffolding Progress: How Structured Editors Shape Novice Errors When Transitioning from Blocks to Text. *ACM SIGCSE Technical Symposium on Computer Science Education*. 556-562. [35% acceptance rate]

[C.136] Fengyuan Zhu, Zhuoyue Lyu, Mauricio Sousa, **Tovi Grossman**. 2022. Touching The Droid: Understanding and Improving Touch Precision With Mobile Devices in Virtual Reality. *IEEE ISMAR International Symposium on Mixed and Augmented Reality*. 807-816. [21% acceptance rate]

[C.135] Karthik Mahadevan, Yan Chen, Maya Cakmak, Anthony Tang, **Tovi Grossman**. 2022. Mimic: In-Situ Recording and Re-Use of Demonstrations to Support Robot Teleoperation. *ACM UIST Symposium on User Interface Software and Technology*. Article No. 40, 1–13. [26% acceptance rate]

[C.134] Kevin Pu, Rainey Fu, Rui Dong, Xinyu Wang, Yan Chen, **Tovi Grossman**. 2022. SemanticOn: Specifying Content-Based Semantic Conditions for Web Automation Programs. *ACM UIST Symposium on User Interface Software and Technology*. Article No. 63, 1–16. [26% acceptance rate]
UIST 2022 Honorable Mention Award

[C.133] Naveen Sendhilnathan, Ting Zhang, Ben Lafreniere, **Tovi Grossman**, Tanya R. Jonker. 2022. Detecting input recognition errors and user errors using gaze dynamics in virtual reality. *ACM UIST Symposium on User Interface Software and Technology.* Article No. 38, 1–19. [26% acceptance rate]

[C.132] Sultan A Alharthi, Ben Lafreniere, **Tovi Grossman**, George Fitzmaurice. 2022. TwoTorials: A Remote Cooperative Tutorial System for 3D Design Software. *ACM GI Graphics Interface Conference*. 14 pages.

[C.131] Alexander Ivanov, David Ledo, **Tovi Grossman**, George Fitzmaurice, Fraser Anderson. 2022. MoodCubes: Immersive Spaces for Collecting, Discovering and Envisioning Inspiration Materials. *ACM SIGCHI Conference on Designing Interactive Systems (DIS)*. 22 pages. [22% acceptance rate]

[C.130] Majeed Kazemitabaar, Viktar Chyhir, David Weintrop, **Tovi Grossman**. 2022. CodeStruct: Design and Evaluation of an Intermediary Programming Environment for Novices to Transition from Scratch to Python. *ACM Interaction Design and Children (IDC) Conference*. 20 pages.[39% acceptance rate]

[C.129] Kevin Huang, Jiannan Li, Maurício Sousa, **Tovi Grossman**. 2022. immersivePOV: Filming How-To Videos with a Head-Mounted 360° Action Camera. *ACM CHI Conference on Human Factors in Computing Systems*. 21 Pages. [25% acceptance rate]
CHI 2022 Best Paper Honorable Mention Award (Top 5%)

[C.128] Jiannan Li, Maurício Sousa, Chu Li, Jessie Liu, Yan Chen, Ravin Balakrishnan, **Tovi Grossman**. 2022. ASTEROIDS: Exploring Swarms of Mini-Telepresence Robots for Physical Skill Demonstration. *ACM CHI Conference on Human Factors in Computing Systems.* 26 Pages. [25% acceptance rate]

[C.127] Jiannan Li, Jiahe Lyu, Mauricio Sousa, Ravin Balakrishnan, Anthony Tang, **Tovi Grossman**. 2021. Route Tapestries: Navigating 360 Virtual Tour Videos Using Slit-Scan Visualizations. *ACM UIST Symposium on User Interface Software and Technology.* 223–238. [26% acceptance rate]

[C.126] Yan Chen, **Tovi Grossman**. 2021. Umitation: Retargeting UI Behavior Examples for Website Design. *ACM UIST Symposium on User Interface Software and Technology.* 922–935. [26% acceptance rate]

[C.125] Bryan Wang, Gang Li, Xin Zhou, Zhourong Chen, **Tovi Grossman**, Yang Li. 2021. Screen2Words: Automatic Mobile UI Summarization with Multimodal Learning. *ACM UIST Symposium on User Interface Software and Technology.* 498–510. [26% acceptance rate]

[C.124] Ben Lafreniere, Tanya R. Jonker, Stephanie Santosa, Mark Parent, Michael Glueck, **Tovi Grossman**, Hrvoje Benko, Daniel Wigdor. 2021. False Positives vs. False Negatives: The Effects of Recovery Time and Cognitive Costs on Input Error Preference. *ACM UIST Symposium on User Interface Software and Technology*. 54–68. [26% acceptance rate]

[C.123] Justin Matejka, **Tovi Grossman**, George Fitzmaurice. 2021. Paper Forager: Supporting the Rapid Exploration of Research Document Collections. *ACM GI Graphics Interface Conference.* 237-245.

[C.122] Justin Matejka, **Tovi Grossman**, George Fitzmaurice. 2021. MeetingMate: an Ambient Interface for Improved Meeting Effectiveness and Corporate Knowledge Sharing. *ACM GI Graphics Interface Conference.* 28-34.

[C.121] Josh Davis, Fraser Anderson, Merten Stroetzel, **Tovi Grossman**, George Fitzmaurice. 2021. Designing Co-Creative AI for Virtual Environments. *ACM C&C Creativity and Cognition Conference*. 1–11. [23% acceptance rate]

[C.120] Bryan Wang, Meng Yu Yang, **Tovi Grossman**. 2021. Soloist: Generating Mixed-Initiative Tutorials from Existing Guitar Instructional Videos Through Audio Processing. *ACM CHI Conference on Human Factors in Computing System*s. Article 98. 1-14. [26% acceptance rate]

[C.119] Karthik Mahadevan, Mauricio Sousa, Anthony Tang, **Tovi Grossman**. 2021. "Grip-that-there": An Investigation of Explicit and Implicit Task Allocation Techniques for Human-Robot Collaboration. *ACM CHI Conference on Human Factors in Computing Systems*. Article 215. 1-14. [26% acceptance rate]
CHI 2021 Best Paper Honorable Mention Award (Top 5%)

[C.118] Rebecca Krosnick, Fraser Anderson, Justin Matejka, Steve Oney, Walter S. Lasecki, **Tovi Grossman**, and George Fitzmaurice. 2021. Think-Aloud Computing: Supporting Rich and Low-Effort Knowledge Capture. *ACM CHI Conference on Human Factors in Computing Systems*. Article 199. 1-13. [26% acceptance rate]

[C.117] Mackenzie Leake, Frances Lai, **Tovi Grossman**, Daniel Wigdor, and Ben Lafreniere. 2021. PatchProv: Supporting Improvisational Design Practices for Modern Quilting. *ACM CHI Conference on Human Factors in Computing Systems*. Article 500. 1-17. [26% acceptance rate]

[C.116] Sunggeun Ahn, Stephanie Santosa, Mark Parent, Daniel Wigdor, **Tovi Grossman**, and Marcello Giordano. 2021. StickyPie: A Gaze-Based, Scale-Invariant Marking Menu Optimized for AR/VR. *ACM CHI Conference on Human Factors in Computing Systems*. Article 739. 1-16. [26% acceptance rate]

[C.115] Geoffrey X Yu, **Tovi Grossman**, and Gennady Pekhimenko. 2020. Skyline: Interactive In-Editor Computational Performance Profiling for Deep Neural Network Training. *ACM UIST Symposium on User Interface Software and Technology*. 126-139. [22% acceptance rate]

[C.114] Kimia Kiani, Parmit Chilana, Andrea Bunt, **Tovi Grossman** and George Fitzmaurice. 2020. "I Would Just Ask Someone": Learning Feature-Rich Design Software in the Modern Workplace. *IEEE VL/HCC Symposium on Visual Languages and Human-Centric Computing*. 1-10. [30% acceptance rate]

[C.113] Fengyuan Zhu, **Tovi Grossman**. 2020. BISHARE: Exploring Bidirectional Interactions Between Smartphones and Head-Mounted Augmented Reality. *ACM CHI Conference on Human Factors in Computing Systems.* 1-14. [24% acceptance rate]

[C.112] Bryan Wang, **Tovi Grossman**. 2020. BlyncSync: Enabling Multimodal Smartwatch Gestures with Synchronous Touch and Blink. *ACM CHI Conference on Human Factors in Computing Systems.* 1-14. [24% acceptance rate]

[C.111] Rorik Henrikson, **Tovi Grossman**, Sean Trowbridge, Daniel Wigdor, Hrvoje Benko. 2020. Head-Coupled Kinematic Template Matching: A Prediction Model for Ray Pointing in VR. *ACM CHI Conference on Human Factors in Computing Systems.* 1-14. [24% acceptance rate]

[C.110] Nikhita Joshi, Justin Matejka, Fraser Anderson, **Tovi Grossman**, George Fitzmaurice. 2020. MicroMentor: Peer-to-Peer Software Help Sessions in Three Minutes or Less. *ACM CHI Conference on Human Factors in Computing Systems.* 1-13. [24% acceptance rate]

[C.109] Di (Laura) Chen, Ravin Balakrishnan, **Tovi Grossman**. 2020. Disambiguation Techniques for Freehand Object Manipulations in Virtual Reality. *IEEE Conference on Virtual Reality and 3D User Interfaces.* 285-292. [21% acceptance rate]

[C.108] Minsuk Chang, Ben Lafreniere, Juho Kim, George Fitzmaurice, **Tovi Grossman**. 2020. Workflow Graphs: A Computational Model of Collective Task Strategies for 3D Design Software. *ACM GI Graphics Interface Conference*. 1-11.

[C.107] Jiannan Li, Ravin Balakrishnan, **Tovi Grossman**. 2020. StarHopper: A Touch Interface for Remote Object-Centric Drone Navigation. *ACM GI Graphics Interface Conference.* 1-10.

[C.106] Matt Whitlock, George Fitzmaurice, **Tovi Grossman**, Justin Matejka. 2020s. AuthAR: Concurrent Authoring of Tutorials for AR Assembly Guidance. *ACM GI Graphics Interface Conference.* 1-9.

[C.105] Balasaravanan Thoravi Kumaravel, Fraser Anderson, George Fitzmaurice, Bjoern Hartmann, **Tovi Grossman**. 2019. Loki: Facilitating Remote Instruction of Physical Tasks Using Bi-Directional Mixed-Reality Telepresence. *ACM UIST Symposium on User Interface Software and Technology*. 161-174. [24% acceptance rate]

[C.104] Ariel Weingarten, Ben Lafreniere, George Fitzmaurice, **Tovi Grossman**. 2019. DreamRooms: Prototyping Rooms in Collaboration with a Generative Process. *ACM GI Graphics Interface Conference*. 1-9. [42% acceptance rate]

[C.103] Ruta Desai, Fraser Anderson, Justin Matejka, Stelian Coros, James McCann, George Fitzmaurice, **Tovi Grossman**. 2019. Geppetto: Enabling Semantic Design of Expressive Robot Behaviors. *ACM CHI Conference on Human Factors in Computing Systems*. Paper No. 369. 1-14. [24% acceptance rate]
CHI 2019 Best Paper Award (Top 1%)

[C.102] Jun Gong, Fraser Anderson, George Fitzmaurice, **Tovi Grossman**. 2019. Instrumenting and Analyzing Fabrication Activities, Users, and Expertise. *ACM CHI Conference on Human Factors in Computing Systems*. Paper No. 324. 1-14. [24% acceptance rate]

[C.101] Teng Han, Fraser Anderson, Pourang Irani, **Tovi Grossman**. (2018). HydroRing: Supporting Mixed Reality Haptics Using Liquid Flow. *ACM symposium on user interface software and technology*. 913-925. [21% acceptance rate]

[C.100] Nora Willett, Rubaiat Habib Kazi, Michael Chen, George Fitzmaurice, Adam Finkelstein, **Tovi Grossman**. (2018). A Mixed-Initiative Interface for Animating Static Pictures. *ACM symposium on user interface software and technology*. 649-661. [21% acceptance rate]

[C.99] Ben Lafreniere, **Tovi Grossman**. (2018). Blocks-to-CAD: A Cross-Application Bridge from Minecraft to 3D Modeling. *ACM symposium on user interface software and technology*. 637-648. [21% acceptance rate]

[C.98] Jeremy Warner, Ben Lafreniere, George Fitzmaurice, **Tovi Grossman**. (2018). ElectroTutor: Test-Driven Physical Computing Tutorials. *ACM symposium on user interface software and technology*. 435-446. [21% acceptance rate]

[C.97] Volodymyr Dziubak, Ben Lafreniere, **Tovi Grossman**, Andrea Bunt, George Fitzmaurice. (2018). Maestro: Designing a System for Real-Time Orchestration of 3D Modeling Workshops. *ACM symposium on user interface software and technology*. 287-298. [21% acceptance rate]

[C.96] Xiang 'Anthony' Chen, Ye Tao, Guanyun Wang, Runchang Kang, **Tovi Grossman**, Stelian Coros, Scott Hudson. 2018. Forte: User-Driven Generative Design. *Proceedings of the ACM CHI Conference on Human Factors in Computing Systems.* Paper No. 496. 1-12. [25% Acceptance Rate]

[C.95] Nathaniel Hudson, Ben Lafreniere, Parmit Chilana, and **Tovi Grossman**. 2018. Investigating How Online Help and Learning Resources Support Children's Use of 3D Design Software. *Proceedings of the ACM CHI Conference on Human Factors in Computing Systems.* Paper No. 257. 1-14. [25% Acceptance Rate]

[C.94] Justin Matejka, Michael Glueck, Erin Bradner, Ali Hashemi, **Tovi Grossman**, and George Fitzmaurice. 2018. Dream Lens: Exploration and Visualization of Large-Scale Generative Design Datasets. *Proceedings of the ACM CHI Conference on Human Factors in Computing Systems.* Paper No. 369. 1-12. [25% Acceptance Rate]

[C.93] Rahul Arora, Rubaiat Habib Kazi, **Tovi Grossman**, George Fitzmaurice, and Karan Singh. 2018. SymbiosisSketch: Combining 2D & 3D Sketching for Designing Detailed 3D Objects in Situ. *Proceedings of the ACM CHI Conference on Human Factors in Computing Systems.* Paper No. 185. 1-15. [25% Acceptance Rate]

[C.92] Xu Wang, Ben Lafreniere, and **Tovi Grossman**. 2018. Leveraging Community-Generated Videos and Command Logs to Classify and Recommend Software Workflows. *Proceedings of the ACM CHI Conference on Human Factors in Computing Systems.* Paper No. 285. 1-13. [25% Acceptance Rate]

[C.91] Fraser Anderson, **Tovi Grossman**, George Fitzmaurice. 2017. Trigger-Action-Circuits: Leveraging Generative Design to Enable Novices to Design and Build Circuitry. *ACM symposium on user interface software and technology*. 331-342. [23% Acceptance Rate]

[C.90] Rubaiat Habib Kazi, **Tovi Grossman**, Hyunmin Cheong, Ali Hashemi, George Fitzmaurice. 2017. DreamSketch: Early Stage 3D Design Explorations with Sketching and Generative Design. *ACM symposium on user interface software and technology*. 401-414. [23% Acceptance Rate]

[C.89] Seongkook Heo, Michelle Annett, Ben Lafreniere, **Tovi Grossman**, George Fitzmaurice. 2017. No Need to Stop What You're Doing: Exploring No-Handed Smartwatch Interaction. *Proceedings of Graphics Interface*. 107-116. [50% Acceptance Rate]

[C.88] Barrett Ens, Fraser Anderson, **Tovi Grossman**, Michelle Annett, Pourang Irani, George Fitzmaurice. 2017. Ivy: Exploring Spatially Situated Visual Programming for Authoring and Understanding Intelligent Environments. *Proceedings of Graphics Interface.* 156-163. [50% Acceptance Rate]

[C.87] Ailie Fraser, **Tovi Grossman**, George Fitzmaurice. 2017. WeBuild: Automatically Distributing Assembly Tasks Among Collocated Workers to Improve Coordination. *Proceedings of the ACM CHI Conference on Human Factors in Computing Systems.* 1817-1830. [25% Acceptance Rate]

[C.86] David Ledo, Fraser Anderson, Ryan Schmidt, Lora Oehlberg, Saul Greenberg, **Tovi Grossman**. 2017. Pineal: Bringing Passive Objects to Life with Embedded Mobile Devices. 2017. *Proceedings of the ACM CHI Conference on Human Factors in Computing Systems*. 2583-2593. [25% Acceptance Rate]

[C.85] Rahul Arora, Rubaiat Habib Kazi, Fraser Anderson, **Tovi Grossman**, Karan Singh, George Fitzmaurice. 2017. Experimental Evaluation of Sketching on Surfaces in VR. *Proceedings of the ACM CHI Conference on Human Factors in Computing Systems*. 5643-5654. [25% Acceptance Rate]

[C.84] Lauren Vasey, Long Nguyen, **Tovi Grossman**, Heather Kerrick, Danil Nagy, Evan Atherton, David Thomasson, Nicholas Cote, Tobias Schwinn, David Benjamin, Maurice Conti, George Fitzmaurice, Achim Menges. 2016. Collaborative Construction: Human and Robot Collaboration Enabling the Fabrication and Assembly of a Filament-Wound Structure. *Proceedings of the 36th Annual Conference of the Association for Computer Aided Design in Architecture.* 184-195.

[C.83] Benjamin Lafreniere, **Tovi Grossman**, Fraser Anderson, Justin Matejka, Heather Kerrick, Danil Nagy, Lauren Vasey, Evan Atherton, Nicholas Beirne, Marcelo Coelho, Nicholas Cote, Steven Li, Andy Nogueira, Long Nguyen, Tobias Schwinn, James Stoddart, David Thomasson, Ray Wang, Thomas White, David Benjamin, Maurice Conti, Achim Menges, George Fitzmaurice. 2016. Crowdsourced Fabrication. *Proceedings of the ACM UIST Symposium on User Interface Software and Technology.* 15-28. [21% Acceptance Rate]

[C.82] Jun Xing, Rubaiat Habib, **Tovi Grossman**, Li-Yi Wei, Jos Stam, George Fitzmaurice. 2016. Energy-Brushes: Interactive Tools for Illustrating Stylized Elemental Dynamics. *Proceedings of the ACM UIST Symposium on User Interface Software and Technology.* 755-766. [21% Acceptance Rate]

[C.81] Xiang 'Anthony' Chen, Jeeeun Kim, Jennifer Mankoff, **Tovi Grossman**, Stelian Coros, Scott E. Hudson. 2016. Reprise: A Design Tool for Specifying, Generating, and Customizing 3D Printable Adaptations on Everyday Objects. *Proceedings of the ACM UIST Symposium on User Interface Software and Technology*. 29-39. [21% Acceptance Rate]

[C.80] Rubaiat Habib, **Tovi Grossman**, Nobuyuki Umetani, George Fitzmaurice. 2016. Motion Amplifiers: Sketching Dynamic Illustrations Using the Principles of 2D Animation. *Proceedings of the ACM CHI Conference on Human Factors in Computing Systems.* 4599-4609. [23% Acceptance Rate]

[C.79] Rubaiat Habib, **Tovi Grossman**, Cory Mogk, Ryan Schmidt, George Fitzmaurice. 2016. ChronoFab: Fabricating Motion. *Proceedings of the ACM CHI Conference on Human Factors in Computing Systems.* 908-918. [23% Acceptance Rate]

[C.78] Raf Ramakers, Fraser Anderson, **Tovi Grossman**, George Fitzmaurice. 2016. RetroFab: A Design Tool for Retrofitting Physical Interfaces using Actuators, Sensors and 3D Printing. *Proceedings of the ACM CHI Conference on Human Factors in Computing Systems.* 409-419. [23% Acceptance Rate]
CHI 2016 Best Paper Honorable Mention Award (Top 5%)

[C.77] Justin Matejka, Michael Glueck, **Tovi Grossman**, George Fitzmaurice. 2016. The Effect of Visual Appearance on the Performance of Continuous Sliders and Visual Analogue Scales. *Proceedings of the ACM CHI Conference on Human Factors in Computing Systems.* 5421-5432. [23% Acceptance Rate]
CHI 2016 Best Paper Award (Top 1%)

[C.76] Ben Lafreniere, Carl Gutwin, Andy Cockburn, **Tovi Grossman**. 2016. Faster Command Selection on Touchscreen Watches. *Proceedings of the ACM CHI Conference on Human Factors in Computing Systems.* 4663-4674. [23% Acceptance Rate]

[C.75] Madeline Gannon, **Tovi Grossman**, George Fitzmaurice. 2016. ExoSkin: On-Body Fabrication. *Proceedings of the ACM CHI Conference on Human Factors in Computing Systems.* 5996-6007. [23% Acceptance Rate]

[C.74] Haijun Xia, Bruno De Araujo, **Tovi Grossman**, Daniel Wigdor. 2016. Object-Oriented Drawing. *Proceedings of the ACM CHI Conference on Human Factors in Computing Systems.* 4610-4621. [23% Acceptance Rate]
CHI 2016 Best Paper Award (Top 1%)

[C.73] Michelle Annett, Matthew Lakier, Franklin Li, Daniel Widgor, **Tovi Grossman**, George Fitzmaurice. 2016. The Living Room: Exploring the Haunted and Paranormal to Transform Design and Interaction. *Proceedings of the ACM SIGCHI Conference on Designing Interactive Systems.* 1328-1340. [26% Acceptance Rate]

[C.72] Jarrod Knibbe, **Tovi Grossman** and George Fitzmaurice. 2015. Smart Makerspace: An Immersive Instructional Space for Physical Tasks. *Proceedings of the ACM Interanational Conference on Interactive Tabletops and Surfaces.* 83-92. [24% Acceptance Rate]

[C.71] Haijun Xia, **Tovi Grossman** and George Fitzmaurice. 2015. NanoStylus: Enhancing Input on Ultra-Small Displays with a Finger-Mounted Stylus. *Proceedings of the ACM UIST Symposium on User Interface Software and Technology.* 447-456. [24% Acceptance Rate]

[C.70] Michelle Annett, **Tovi Grossman**, Daniel Wigdor and George Fitzmaurice. 2015. MoveableMaker: Facilitating the Design, Generation, and Assembly of Moveable Papercraft. *Proceedings of the ACM UIST Symposium on User Interface Software and Technology*. 565-574. [24% Acceptance Rate]

[C.69] Barrett Ens, **Tovi Grossman**, Fraser Anderson, Justin Matejka and George Fitzmaurice. 2015. Candid Interaction: Revealing Hidden Mobile and Wearable Computing Activities. *Proceedings of the ACM UIST Symposium on User Interface Software and Technology*. 467-476. [24% Acceptance Rate]

[C.68] **Tovi Grossman**, Xiang Anthony Chen and George Fitzmaurice. 2015. Typing on Glasses: Adapting Text Entry to Smart Eyewear. *Proceedings of the ACM MobileHCI Conference on Human-Computer Interaction with Mobile Devices and Services*. 144-152. [27% Acceptance Rate]

[C.67] Madeline Gannon, **Tovi Grossman** and George Fitzmaurice. 2015. Tactum: A Skin-Centric Approach to Digital Design and Fabrication. *Proceedings of the ACM CHI 2015 Conference on Human Factors in Computing Systems*. 1779-1788. [23% Acceptance Rate]
CHI 2015 Best Paper Honorable Mention Award (Top 5%)

[C.66] Fraser Anderson, **Tovi Grossman**, Daniel Wigdor and George Fitzmaurice. 2015. Supporting Subtlety with Deceptive Devices and Illusory Interactions. *Proceedings of the ACM CHI 2015 Conference on Human Factors in Computing Systems*. 1489-1498. [23% Acceptance Rate]
CHI 2015 Best Paper Honorable Mention Award (Top 5%)
CHI 2015 Best Talk Award

[C.65] Valkyrie Savage, Ryan Schmidt, **Tovi Grossman**, George Fitzmaurice and Björn Hartmann. 2014. A Series of Tubes: Adding Interactivity to 3D Prints Using Internal Pipes. *Proceedings of the ACM UIST Symposium on User Interface Software and Technology*. 3-12. [22% Acceptance Rate]

[C.64] Rubaiat Habib, Fanny Chevalier, **Tovi Grossman** and George Fitzmaurice. 2014. Kitty: Sketching Dynamic and Interactive Illustrations. *Proceedings of the ACM UIST Symposium on User Interface Software and Technology*. 395-405. [22% Acceptance Rate]
UIST 2014 Best Talk Award

[C.63] Justin Matejka, **Tovi Grossman** and George Fitzmaurice. 2014. Video Lens: Rapid Playback and Exploration of Large Video Collections and Associated Metadata. *Proceedings of the ACM UIST Symposium on User Interface Software and Technology*. 541-500. [22% Acceptance Rate]

[C.62] Xiang Anthony Chen, **Tovi Grossman** and George Fitzmaurice. 2014. Swipeboard: A Text Entry Technique for Ultra-Small Devices That Supports Novice to Expert Transitions. *Proceedings of the ACM UIST Symposium on User Interface Software and Technology*. 615-620. [22% Acceptance Rate]

[C.61] Rubaiat Habib, Fanny Chevalier, **Tovi Grossman**, Shengdong Zhao and George Fitzmaurice. 2014. Draco: Bringing Life to Illustrations with Kinetic Textures. *Proceedings of the ACM CHI Conference on Human Factors in Computing Systems*. 351-360. [23% Acceptance Rate]
Apple 2016 iPad App of the Year

CHI 2014 Best Paper Honorable Mention Award (Top 5%)
CHI 2014 Best Video Award
CHI 2014 Best Talk Award
SIGGRAPH 2014 Studio Project

[C.60] Xiang Anthony Chen, **Tovi Grossman**, Daniel Wigdor and George Fitzmaurice. 2014. Duet: Exploring Joint Interactions on a Smart Phone and a Smart Watch. *Proceedings of the ACM CHI Conference on Human Factors in Computing Systems*. 159-168. [23% Acceptance Rate]
CHI 2014 Best Paper Award (Top 1%)
CHI 2014 Best Talk Award

[C.59] Ben Lafreniere, **Tovi Grossman**, Justin Matejka and George Fitzmaurice. 2014. Investigating the Feasibility of Extracting Tool Demonstrations from In-Situ Video Content. *Proceedings of the ACM CHI Conference on Human Factors in Computing Systems*. 4007-4016. [23% Acceptance Rate]
CHI 2014 Best Paper Honorable Mention Award (Top 5%)

[C.58] Hsiang-Ting (Tim) Chen, **Tovi Grossman**, Ryan Schmidt, Björn Hartmann, George Fitzmaurice and Maneesh Agrawala. 2014. History Assisted View Authoring for 3D Models. *Proceedings of the ACM CHI Conference on Human Factors in Computing Systems*. 2027-2036. [23% Acceptance Rate]

[C.57] Wei Li, **Tovi Grossman** and George Fitzmaurice. 2014. CADament: A Gamified Multiplayer Software Tutorial System. *Proceedings of the ACM CHI Conference on Human Factors in Computing Systems*. 3369-3378. [23% Acceptance Rate]

[C.56] Wei Li, Justin Matejka, **Tovi Grossman** and George Fitzmaurice. 2014. Deploying CommunityCommands: A Software Command Recommender System Case Study. *Proceedings of the IAAI Conference on Innovative Applications of Artificial Intelligence*. 2922-2929. [One of Seven Selected]
IAAI 2014 Innovative Application Award

[C.55] Natalia Bogdan, **Tovi Grossman** and George Fitzmaurice. 2014. HybridSpace: Integrating 3D Freehand Input and Stereo Viewing into Traditional Desktop Applications. *Proceedings of the IEEE 3DUI Symposium on 3D User Interfaces*. 51-58. [20% Acceptance Rate]

[C.54] Fraser Anderson, **Tovi Grossman**, Justin Matejka and George Fitzmaurice. 2013. YouMove: Enhancing Movement Training with an Augmented Reality Mirror. *Proceedings of the ACM UIST Symposium on User Interface Software and Technology*. 311-320. [20% Acceptance Rate]

[C.53] Sylvain Malacria, Joey Scarr, Andy Cockburn, Carl Gutwin and **Tovi Grossman**. 2013. Skillometers: Reflective Widgets that Motivate and Help Users to Improve Performance. *Proceedings of the ACM UIST Symposium on User Interface Software and Technology*. 321-330. [23% Acceptance Rate]

[C.52] Michael Glueck, **Tovi Grossman** and Daniel Wigdor. 2013. A Model of Navigation for Very Large Data Views. *Proceedings of the Graphics Interface Conference.* 8 pages. [33% Acceptance Rate]
GI 2013 Best Student Paper Award

[C.51] Abhijit Karnik, **Tovi Grossman** and Sriram Subramanian. 2013. Comparison of User Performance in Mixed 2D-3D Multi-Display Environments. *Proceedings of the IFIP Conference on Human-Computer Interaction.* 260-277. [31% Acceptance Rate]

[C.50] Justin Matejka, **Tovi Grossman** and George Fitzmaurice. 2013. Swifter: Improved Online Video Scrubbing. *Proceedings of the ACM CHI Conference on Human Factors in Computing Systems*. 1159-1168. [20% Acceptance Rate]

[C.49] Justin Matejka, **Tovi Grossman** and George Fitzmaurice. 2013. Patina: Dynamic Heatmaps for Visualizing Application Usage. *Proceedings of the ACM CHI Conference on Human Factors in Computing Systems*. 3227-3236. [20% Acceptance Rate]

[C.48] Ben Lafreniere, **Tovi Grossman** and George Fitzmaurice. 2013. Community Enhanced Tutorials: Improving Tutorials with Multiple Demonstrations. *Proceedings of the ACM CHI Conference on Human Factors in Computing Systems*. 1779-1788. [20% Acceptance Rate]

[C.47] Nikola Banovic, **Tovi Grossman** and George Fitzmaurice. 2013. The Effect of Time-based Cost of Error in Target-directed Pointing Tasks. *Proceedings of the ACM CHI Conference on Human Factors in Computing Systems*. 1373-1382. [20% Acceptance Rate]

[C.46] Parmit K. Chilana, Andrew J. Ko, Jacob O. Wobbrock and **Tovi Grossman**. 2013. A Multi-Site Field Study of Crowdsourced Contextual Help: Usage and Perspectives of End-Users and Software Teams. *Proceedings of the ACM CHI Conference on Human Factors in Computing Systems*. 217-226. [20% Acceptance Rate]

[C.45] Xing-Dong Yang, **Tovi Grossman**, Daniel Wigdor and George Fitzmaurice. 2012. Magic Finger: Always-Available Input through Finger Instrumentation. *Proceedings of the ACM UIST Symposium on User Interface Software and Technology*. 147-156. [22% Acceptance Rate]

[C.44] Nikola Banovic, **Tovi Grossman**, Justin Matejka and George Fitzmaurice. 2012. Waken: Reverse Engineering Usage Information and Interface Structure from Software Videos. *Proceedings of the ACM UIST Symposium on User Interface Software and Technology*. 83-92. [22% Acceptance Rate]

[C.43] Wei Li, **Tovi Grossman** and George Fitzmaurice. 2012. GamiCAD: A Gamified Tutorial System for First Time AutoCAD Users. *Proceedings of the ACM UIST Symposium on User Interface Software and Technology*. 1103-1112. [22% Acceptance Rate]

[C.42] Christian Holz, **Tovi Grossman**, George Fitzmaurice and Anne Agur. 2012. Implanted User Interfaces. *Proceedings of the ACM CHI Conference on Human Factors in Computing Systems*. 503-512. [23% Acceptance Rate]

[C.41] Justin Matejka, **Tovi Grossman** and George Fitzmaurice. 2012. Swift: Reducing the Effects of Latency in Online Video Scrubbing. *Proceedings of the ACM CHI Conference on Human Factors in Computing Systems*. 637-646. [23% Acceptance Rate]

[C.40] Nicholas Kong, **Tovi Grossman**, Björn Hartmann, George Fitzmaurice and Maneesh Agrawala. 2012. Delta: A Tool for Representing and Comparing Workflows. *Proceedings of the ACM CHI Conference on Human Factors in Computing Systems*. 1027-1036. [23% Acceptance Rate]

[C.39] Nikola Banovic, Fanny Chevalier, **Tovi Grossman** and George Fitzmaurice. 2012. Triggering Triggers and Burying Barriers to Customizing Software. *Proceedings of the ACM CHI Conference on Human Factors in Computing Systems*. 2717-2726. [23% Acceptance Rate]

[C.38] Justin Matejka, **Tovi Grossman** and George Fitzmaurice. 2011. IP-QAT: In-Product Questions, Answers and Tips. *Proceedings of the ACM UIST Symposium on User Interface Software and Technology*. 175-184. [26% Acceptance Rate]

[C.37] Michelle Annett, **Tovi Grossman**, Daniel Wigdor and George Fitzmaurice. 2011. Medusa: A Proximity-Aware Multi-touch Tabletop. *Proceedings of the ACM UIST Symposium on User Interface Software and Technology*. 337-346. [26% Acceptance Rate]

[C.36] Jennifer Fernquist, **Tovi Grossman** and George Fitzmaurice. 2011. Sketch-Sketch Revolution: An Engaging Tutorial System for Guided Sketching and Application Learning. *Proceedings of the ACM UIST Symposium on User Interface Software and Technology*. 373-382. [26% Acceptance Rate]

[C.35] Michael Ekstrand, Wei Li, **Tovi Grossman**, Justin Matejka and George Fitzmaurice. 2011. Searching for Software Learning Resources using Application Context. *Proceedings of the ACM UIST Symposium on User Interface Software and Technology*. 195-204. [26% Acceptance Rate]

[C.34] Wei Li, **Tovi Grossman**, Justin Matejka and George Fitzmaurice. 2011. TwitApp: In-product Micro-Blogging for Design Sharing. *Proceedings of the ACM UIST Symposium on User Interface Software and Technology*. 185-194. [26% Acceptance Rate]

[C.33] Michael Rooke, **Tovi Grossman** and George Fitzmaurice. 2011. AppMap: Exploring User Interface Visualizations. *Proceedings of Graphics Interface 2011*. 111-118. [32% Acceptance Rate]

[C.32] Justin Matejka, **Tovi Grossman** and George Fitzmaurice. 2011. Ambient Help. *Proceedings of the ACM CHI Conference on Human Factors in Computing Systems*. 2751-2760. [27% Acceptance Rate]

[C.31] Xiaojun Bi, **Tovi Grossman**, Justin Matejka and George Fitzmaurice. 2011. Magic Desk: Bringing Multi-Touch Surfaces into Desktop Work. *Proceedings of the ACM CHI Conference on Human Factors in Computing Systems*. 2511-2520. [27% Acceptance Rate]
CHI 2011 Best Paper Honorable Mention Award (Top 5%)

[C.30] Khalad Hassan, **Tovi Grossman** and Pourang Irani. 2011. Comet and Target Ghost: Techniques for Selecting Moving Targets. *Proceedings of the ACM CHI Conference on Human Factors in Computing Systems*. 839-848. [27% Acceptance Rate]

[C.29] Parmit Chilana, **Tovi Grossman** and George Fitzmaurice. 2011. Modern Software Product Support Processes and the Usage of Multimedia Formats. *Proceedings of the ACM CHI Conference on Human Factors in Computing Systems*. 3093-3102. [27% Acceptance Rate]

[C.28] Xing-Dong Yang, **Tovi Grossman**, Pourang Irani and George Fitzmaurice. 2011. TouchCuts and TouchZoom: Enhanced Target Selection for Touch Displays using Finger Proximity Sensing. *Proceedings of the ACM CHI Conference on Human Factors in Computing Systems*. 2585-2594. [27% Acceptance Rate]

[C.27] **Tovi Grossman**, Justin Matejka and George Fitzmaurice. 2010. Chronicle: Capture, Exploration, and Playback Of Document Workflow Histories. *Proceedings of ACM UIST Symposium on User Interface Software and Technology*. 143-152. [18% Acceptance Rate]

[C.26] James McCrae, Michael Glueck, **Tovi Grossman**, Azam Khan and Karan Singh. 2010. Exploring the Design Space of Multiscale 3D Orientation. *Proceedings of the International Conference on Advanced Visual Interfaces*. 81-88. [20% Acceptance Rate]

[C.25] **Tovi Grossman** and George Fitzmaurice. 2010. ToolClips: An Investigation of Contextual Video Assistance for Functionality Understanding. *Proceedings of the ACM CHI Conference on Human Factors in Computing Systems*. 1515-1524. [22% Acceptance Rate]
CHI 2010 Best Paper Honorable Mention Award (Top 5%)

[C.24] Hyunyoung Song, Francois Guimbretiere, **Tovi Grossman** and George Fitzmaurice. 2010. MouseLight: Bimanual Interactions on Digital Paper Using a Pen and a Spatially-Aware Mobile Projector. *Proceedings of the ACM CHI Conference on Human Factors in Computing Systems*. 2451-2460. [22% Acceptance Rate]
CHI 2010 Best Paper Honorable Mention Award (Top 5%)

[C.23] G. Julian Lepinski, **Tovi Grossman** and George Fitzmaurice. 2010. The Design and Evaluation of Multitouch Marking Menus. *Proceedings of the ACM CHI Conference on Human Factors in Computing Systems*. 2233-2242. [22% Acceptance Rate]

[C.22] Justin Matejka, Wei Li, **Tovi Grossman** and George Fitzmaurice. 2009. CommunityCommands: Command Recommendations for Software Applications. *Proceedings of the ACM UIST Symposium on User Interface Software and Technology*. 193-202. [18% Acceptance Rate]

[C.21] **Tovi Grossman**, Patrick Baudisch and Ken Hinckley. 2009. Handle Flags: Efficient And Flexible Selections For Inking Applications. *Proceedings of Graphics Interface 2009*. 167-174. [36% Acceptance Rate]

[C.20] **Tovi Grossman**, George Fitzmaurice and Ramtin Attar. 2009. A Survey of Software Learnability: Metrics, Methodologies and Guidelines. *Proceedings of the ACM CHI Conference on Human Factors in Computing Systems*. 649-658. [25% Acceptance Rate]
CHI 2009 Best Paper Honorable Mention Award (Top 5%)

[C.19] Justin Matejka, **Tovi Grossman**, Jessica Lo and George Fitzmaurice. 2009. The Design and Evaluation of Multi-Finger Mouse Emulation Techniques. *Proceedings of the ACM CHI Conference on Human Factors in Computing Systems*. 1073-1082. [25% Acceptance Rate]

[C.18] Hyunyoung Song, **Tovi Grossman**, George Fitzmaurice, Francois Guimbretiere, Azam Khan, Ramtin Attar and Gordon Kurtenbach. 2009. Penlight: Combining a Mobile Projector and a Digital Pen for Dynamic Visual Overlay. *Proceedings of the ACM CHI Conference on Human Factors in Computing Systems*. 143-152. [25% Acceptance Rate]

[C.17] **Tovi Grossman** and Ravin Balakrishnan. 2008. Collaborative Interaction With Volumetric Displays. *Proceedings of the ACM CHI Conference on Human Factors in Computing Systems*. 383-392. [22% Acceptance Rate]

[C.16] **Tovi Grossman** and Daniel Wigdor. 2007. Going Deeper: A Taxonomy of 3D on the Tabletop. *Proceedings of IEEE TableTop International Workshop on Horizontal Interactive Human-Computer Systems*. 137-144.

[C.15] **Tovi Grossman**, Daniel Wigdor and Ravin Balakrishnan. 2007. Exploring and Reducing the Effects of Orientation on Text Readability in Volumetric Displays. *Proceedings of the ACM CHI Conference on Human Factors in Computing Systems*. 483-492. [22% Acceptance Rate]

[C.14] **Tovi Grossman**, Nicholas Kong and Ravin Balakrishnan. 2007. Modeling Pointing At Targets of Arbitrary Shapes. *Proceedings of the ACM CHI Conference on Human Factors in Computing Systems*. 463-472. [22% Acceptance Rate]

[C.13] **Tovi Grossman**, Pierre Dragicevic and Ravin Balakrishnan. 2007. Strategies for Accelerating On-Line Learning of Hotkeys. *Proceedings of the ACM CHI Conference on Human Factors in Computing Systems*. 1591-1600. [22% Acceptance Rate]

[C.12] Jeremy Birnholtz, **Tovi Grossman**, Clarissa Mak and Ravin Balakrishnan. 2007. An Exploratory Study of Input Configuration and Group Process in a Negotiation Task Using a Large Display. *Proceedings of the ACM CHI Conference on Human Factors in Computing Systems*. 91-100. [22% Acceptance Rate]

[C.11] Raghavendra Kattinakere, **Tovi Grossman** and Sriram Subramanian. 2007. Modeling Steering Within Above-The-Surface Interaction Layers. *Proceedings of the ACM CHI Conference on Human Factors in Computing Systems*. 317-326. [22% Acceptance Rate]

[C.10] Lode Vanacken, **Tovi Grossman** and Karin Coninx. 2007. Exploring the Effects of Environment Density and Target Visibility on Object Selection in 3D Virtual Environments. *Proceedings of the IEEE 3DUI Symposium on 3D User Interfaces*. p. 117-124. [22% Acceptance Rate]

[C.9] **Tovi Grossman** and Ravin Balakrishnan. 2006. The Design and Evaluation of Selection Techniques for 3D Volumetric Displays. *Proceedings of the ACM UIST 2006 Symposium on User Interface Software and Technology*. 3-12. [20% Acceptance Rate]

[C.8] **Tovi Grossman** and Ravin Balakrishnan. 2006. An Evaluation of Depth Perception on Volumetric Displays. *Proceedings the AVI Working Conference on Advanced Visual Interfaces*. p. 193-200. [25% Acceptance Rate]

[C.7] **Tovi Grossman**, Ken Hinckley, Patrick Baudisch, Maneesh Agrawala and Ravin Balakrishnan. 2006. Hover Widgets: Using the Tracking State to Extend the Capabilities of Pen-Operated Devices. *Proceedings of the ACM CHI Conference on Human Factors in Computing Systems*. 861-870. [24% Acceptance Rate]

[C.6] **Tovi Grossman** and Ravin Balakrishnan. 2005. The Bubble Cursor: Enhancing Target Acquisition By Dynamic Resizing Of The Cursor's Activation Area. *Proceedings of the ACM CHI Conference on Human Factors in Computing Systems*. 281-290. [25% Acceptance Rate]
CHI 2005 Best Paper Award (Top 1%)

[C.5] **Tovi Grossman**, Daniel Wigdor and Ravin Balakrishnan. 2004. Multi-Finger Gestural Interaction with 3D Volumetric Displays. *Proceedings of the ACM UIST 2004 Symposium on User Interface Software and Technology*. 61-70. [21% Acceptance Rate]
UIST 2004 Best Paper Award (Top 1%)

[C.4] **Tovi Grossman** and Ravin Balakrishnan. 2004. Pointing At Trivariate Targets in 3D Environments. *Proceedings of the ACM CHI Conference on Human Factors in Computing Systems*. 447-454. [16% Acceptance Rate]

[C.3] **Tovi Grossman**, Ravin Balakrishnan and Karan Singh. 2003. An Interface For Creating And Manipulating Curves Using A High Degree-Of-Freedom Input Device. *Proceedings of the ACM CHI Conference on Human Factors in Computing Systems*. 185-192. [16% Acceptance Rate]

[C.2] **Tovi Grossman**, Ravin Balakrishnan, Gordon Kurtenbach, George W. Fitzmaurice, Azam Khan and William Buxton. 2002. Creating Principal 3D Curves with Digital Tape Drawing. *Proceedings of the ACM CHI Conference on Human Factors in Computing Systems*. 121-128. [15% Acceptance Rate]

[C.1] **Tovi Grossman**, Ravin Balakrishnan, Gordon Kurtenbach, George W. Fitzmaurice, Azam Khan and William Buxton. 2001. Interaction Techniques for 3D Modeling On Large Displays. *Proceedings of ACM I3D 2001 Symposium on Interactive 3D Graphics*. 17-23. [20% Acceptance Rate]

Conference Short Papers (Fully Refereed)

[c.3] Barrett Ens, Fraser Anderson, **Tovi Grossman**, Michelle Annett, Pourang Irani, George Fitzmaurice. 2017. Won by a Head: A Platform Comparison of Smart Object Linking in Virtual Environments. *Proceedings of the International Conference on Artificial Reality and Telexistence & Eurographics Symposium on Virtual Environments*. 17-20.

[c.2] Xiaole Kuang, Bo Yi, Shengdong Zhao, Jianann Chow, **Tovi Grossman** and George Fitzmaurice. 2012. A Classification of Opening Posts in Commercial Software Help Forums. *Proceedings of the 10th Asia Pacific Conference on Computer Human Interaction*. ACM, New York, NY, USA. 4 pages. [23% Acceptance Rate]

[c.1] Parmit Chilana, Andrew Ko, Jacob Wobbrock, **Tovi Grossman** and George Fitzmaurice. 2011. Post-Deployment Usability: A Survey of Current Practices. *Proceedings of the ACM CHI Conference on Human Factors in Computing Systems*. 2243-2246. [27% Acceptance Rate]

B. Books and/or Chapters

Book Chapters

[B.3] Marcelo Coelho and **Tovi Grossman**. 2017. Crowd-Driven Pattern Formation. Architectural Design, Special issue S. Tibbits (Ed.). In *Autonomous Assembly: Designing for a new era of collective construction*. Wiley. Volume 87, Issue 4. ISBN: 978-1-119-10235-9.

[B.2] Christian Holz, **Tovi Grossman**, George Fitzmaurice and Anne Agur. 2014. Interaction with Implanted Devices through Implanted User Interfaces. In *Implantable Bioelectronics*. Evgeny Katz (ed.). Wiley. ISBN: 978-3-527-33525-1.

[B.1] **Tovi Grossman** and Daniel Wigdor. 2010. On, Above, and Beyond: Taking Tabletops to the Third Dimension. In *Tabletops - Horizontal Interactive Displays*. Christian Mueller-Tomfelde (ed.). Springer. ISBN: 978-1-84996-112-7.

8. NON-REFEREED PUBLICATIONS

Extended Abstract (Non-Refereed)

[ea.11] Tianquan Di, Daniel Medeiros, Maurício Sousa, **Tovi Grossman**. 2023. VRChoir: Exploring Remote Choir Rehearsals via Virtual Reality. IEEE Conference on Virtual Reality and 3D User Interfaces. 2 pages.

[ea.10] Jiannan Li, Maurício Sousa, Ravin Balakrishnan, **Tovi Grossman**. 2021. Constellation: a Multi-User Interface for Remote Drone Tours. In Proceedings of the 9th International Conference on Human-Agent Interaction. ACM, New York, NY, USA. 6 pages.

[ea.9] Geoffrey Yu, **Tovi Grossman**, Gennady Pekhimenko. 2020. Skyline: Interactive In-Editor Performance Visualizations and Debugging For DNN Training. MLSys'20 Conference on Machine Learning and Systems Demonstration Track. 2 pages.

[ea.8] Jiannan Li, Ravin Balakrishnan, **Tovi Grossman**. 2020. Object-Centric Camera Drone Control for Unconstrained Telepresence. Interdisciplinary Workshop on Human-Drone Interaction (iHDI 2020). CHI 2020 Extended Abstracts. 6 pages.

[ea.7] Helena Mentis, Regan Mandryk, **Tovi Grossman**, Cliff Lampe, Jessica Colnago. 2020. CHI 2030: The Future is Wide Open. In CHI 2020 Extended Abstracts (Panel). PAN02, 3 pages.

[ea.6] Rorik Henrikson, **Tovi Grossman,** Daniel Clarke, Thomas White, Frances Lai, Michael Glueck, Stephanie Santosa, Daniel Wigdor, Sean Trowbridge, Hrvoje Benko. 2020. Head-Coupled Kinematic Template Matching for Target Selection in Hangry Piggos. In CHI 2020 Extended Abstracts (Interactivity). INT042, 4 pages.

[ea.5] Lauren Vasey, **Tovi Grossman**, Heather Kerrick, and Danil Nagy. 2016. The hive: a human and robot collaborative building process. In *ACM SIGGRAPH 2016 Talks*. ACM, New York, NY, USA, Article 83, 2 pages.

[ea.4] Rubaiat Habib Kazi, **Tovi Grossman**, Nobuyuki Umetani, and George Fitzmaurice. 2016. SKUID: sketching dynamic drawings using the principles of 2D animation. In *ACM SIGGRAPH 2016 Talks*. ACM, New York, NY, USA, Article 84, 1 page.

[ea.3] **Tovi Grossman**, Fanny Chevalier & Rubaiat Habib. 2015. Your Paper is Dead! Bringing Life to Research Articles with Animated Figures. In *Proceedings of the ACM Extended Abstracts on Human Factors in Computing Systems*. ACM, New York, NY, USA. 10 pages.

[ea.2] Parmit Chilana, Mary Czerwinski, **Tovi Grossman**, Chris Harrison, Ranjitha Kumar, Tapan Parikh, Shumin Zhai. 2015. Technology Transfer of HCI Research Innovations: Challenges and Opportunities. In *Proceedings of the ACM Extended Abstracts on Human Factors in Computing Systems*. ACM, New York, NY, USA. 6 pages.

[ea.1] Rubaiat Habib Kazi, Fanny Chevalier, **Tovi Grossman**, Shengdong Zhao, and George Fitzmaurice. 2014. DRACO: sketching animated drawings with kinetic textures. In *ACM SIGGRAPH 2014 Studio*. ACM, New York, NY, USA, Article 34, 1 page.

11. INVITED LECTURES

Digitizing the Master-Apprentice Relationship

[p.31] TEDxUofT. University of Toronto. November 2017.

On the future of 3D modeling software

[p.30] **Invited Keynote:** Carnegie Mellon University. CMU 3D Printing Summit. January 2017.

Instrumented and Connected: Designing Next-Generation Learning Experiences
[p.29] **Invited Keynote:** SS2 Studio Summit. Toronto. October 2017.
[p.28] University of Michigan. Interactive and Social Computing Seminar Series. October 2017.
[p.27] University of California Berkeley, School of Information. March 2017.
[p.26] University of California Berkeley, Department of Electrical Engineering and Computer Sciences. March 2017.
[p.25] University of Toronto. February 2017.
[p.24] University of Waterloo. February 2017.
[p.23] University of British Columbia. February 2017.
[p.22] Carnegie Mellon University. HCII Seminar Series. January 2017.
[p.21] Carnegie Mellon University. August 2016.

Tackling the User Interface Challenges of Today and Tomorrow
[p.20] Toronto User Experience Speaker Series

Leveraging Wearables and the Internet of Things for Learning and Task Performance
[p.19] Dartmouth College. February 2016.

Overview of HCI Research at Autodesk Research
[p.18] KAIST. April 2015.

Input, Interaction, and Learning at Autodesk Research
[p.17] University of Waterloo. November 2013.

Understanding and Improving the Learnability of Software Applications
[p.16] Stanford University. June 2012.
[p.15] Massachusetts Institute of Technology. March 2012.
[p.14] University of Waterloo. July 2010.

Interaction design based on human capabilities for contemporary and emerging technologies
[p.13] Microsoft Research, Redmond. April 2008.
[p.12] Brown University. March 2008.
[p.11] Queen's University. March 2008.
[p.10] University of Ontario Institute of Technology. March 2008.
[p.9] Georgia Institute of Technology. March 2008.
[p.8] Florida International University. February 2008.
[p.7] University of Minnesota. February 2008.
[p.6] Cornell University. February 2008.
[p.5] Harvard University. February 2008.
[p.4] University of Washington. February 2008.
[p.3] Adobe Systems Inc., San Jose. January 2008.

Designing and encouraging usage of interaction accelerators
[p.2] University of Washington. January 2008.

Interaction with volumetric displays
[p.1] University of California, Berkeley. February 2007.

D. LIST OF COURSES

13. TEACHING EXPERIENCE

A. Undergraduate Courses Taught

Sep-Dec 2023 *CSC108: Introduction to Computer Programming.*
Undergrad Course. University of Toronto.
Course Instructor. Responsible for two course sections.

Sep-Dec 2020 *CSC428/2514: Human-Computer Interaction.*
Grad/Undergrad Course. University of Toronto.
Primary Instructor. Fully responsible for course design and all course materials.

Jan-Apr 2020 *CSC428/2514: Human-Computer Interaction.*
Grad/Undergrad Course. University of Toronto.
Primary Instructor. Fully responsible for course design and all course materials.

Sep-Dec 2019 *CSC428/2514: Human-Computer Interaction.*
Grad/Undergrad Course. University of Toronto.
Primary Instructor. Fully responsible for course design and all course materials.

Jan-Apr 2019 *CSC428/2514: Human-Computer Interaction.*
Grad/Undergrad Course. University of Toronto.
Primary Instructor. Fully responsible for course design and all course materials.

Sep-Dec 2018 *CSC428/2514: Human-Computer Interaction.*
Grad/Undergrad Course. University of Toronto.
Primary Instructor. Fully responsible for course design and all course materials.

Sep-Dec 2007 *CSC428/2514: Human-Computer Interaction.*
Grad/Undergrad Course. University of Toronto.
Primary Instructor. Fully responsible for course design and all course materials.

Sep-Dec 2006 *CSC428/2514: Human-Computer Interaction.*
Grad/Undergrad Course. University of Toronto.
Primary Instructor. Fully responsible for course design and all course materials.

Sep-Dec 2005 *CSC428/2514: Human-Computer Interaction.*
Grad/Undergrad Course. University of Toronto.
Primary Instructor. Fully responsible for course design and all course materials.

B. Graduate Courses Taught

Jan-Apr 2024 *CSC2524: Topics in Interactive Computing.*
Graduate Advanced Seminar Course. University of Toronto.
Primary Instructor. Fully responsible for course creation, design and all course materials.

Sep-Dec 2020 *CSC2536: Topics in Computer Science and Education.*
Graduate Advanced Seminar Course. University of Toronto.
Primary Instructor. Fully responsible for course creation, design and all course materials.

Jan-Apr 2019 *CSC2536: Topics in Computer Science and Education.* (**New Course)**
Graduate Advanced Seminar Course. University of Toronto.
Primary Instructor. Fully responsible for course creation, design and all course materials.

Jan-Apr 2019 *CSC2524: Topics in Interactive Computing.*
Graduate Advanced Seminar Course. University of Toronto.
Primary Instructor. Fully responsible for course design and all course materials.

C. Theses Supervised

Career Student Numbers			
	To Begin	**In Progress**	**Completed**
Masters Supervisor	0	1	6
Doctoral Supervisor	0	7	1
Doctoral Committee Member	0	6	6
Postdoctoral Fellows	0	2	4
Visiting Graduate Researchers	3	0	12
Research Interns – PhD	0	0	44
Research Interns – Masters	0	0	9
Undergraduate Research Assistants	2	13	34

Masters Students Supervised

2023- *Leping Qiu, University of Toronto. Primary Supervisor*
Thesis Topic TBD.

2023-2024 *Naaz Sibia, University of Toronto. Primary Supervisor.*
Behind the Posts: Exploring Participation in Q&A Forums

2022-2024 *Stephen Brade, University of Toronto. Primary Supervisor.*
Promptify: Text-to-Image Generation through Interactive Prompt Exploration with Large Language Models
[C.149, C.154, ea.5]

2021-2023 *Mingxiao (Eve) Li, University of Toronto. Primary Supervisor.*
EnchantedBrush: Animating in Mixed Reality for Storytelling and Communication
[C.140]

2021-2023 *Jiankai (Kevin) Pu, University of Toronto. Primary Supervisor.*
SemanticOn: Specifying Content-Based Semantic Conditions for Web Automation Programs
[C.134]

2020-2022 *Carlos McGregor Muro, University of Toronto. Primary Supervisor.*
Knowing when students struggle before verbalizing it using non-intrusive psycho-physiological indicators

2018-2019 *Bryan Wang. University of Toronto. Primary Supervisor.*
BlyncSync: Enabling Multimodal Smartwatch Gestures with Synchronous Touch and Blink
Now Ph.D. Student at University of Toronto
[C.111]

Doctoral Students Supervised

2023- *Jiankai (Kevin) Pu, University of Toronto. Primary Supervisor.*
Thesis Topic TBD.
[C.148, ea.6]

2020- *Bryan Wang. University of Toronto. Primary Supervisor.*
Intelligent Interactive Systems for Media Content Creation and Consumption
[C.120, C.125, C.143, C.149, C.154]

2020- *Seyed Majeed Kazemitabaar. University of Toronto. Primary Supervisor.*
Easing the Transition from Block-based to Text-based programming Environments
[C.130, C.137, C.144, C.153, C.160]

2019- *Karthik Mahadevan. University of Toronto. Primary Supervisor.*
Designing Techniques to Relieve the Challenges of Programming Robot Behaviors.
[C.119, C.135, C.142, C.143]

2019- *Blaine Lewis. University of Toronto. Primary Supervisor.*
On Developing Command Selection Techniques for Desktop: A (potential) Misalignment between Research and Users

2019- *Di Chen. University of Toronto. Co-Supervisor.*
Freehand Interaction as an Input Modality in Augmented and Virtual Reality
[C.109, C.150]

2019-2023 *Jiannan Li. University of Toronto. Co-Supervisor.*
Enhancing Viewpoint Mobility in Real-Time Video Communication
[C.107, C.127, C.128, C.129, C.139, C.141, ea.3]

2018- *Fengyuan Zhu. University of Toronto. Primary Supervisor.*
Exploring Hybrid Input Techniques for VR/AR Using Touch Devices and Gestures
[C.113, C.136, C.152, C.159]

Doctoral Committee Membership

2024- *Lillo Mok. University of Toronto. Non-Supervisory Committee Member*
Thesis Topic TBD.

2024- *Fernando Yanez. University of Toronto. Member of Supervisory Committee.*
Thesis Topic TBD.

2022- *Warren Park. University of Toronto. Member of Supervisory Committee.*
Thesis Topic TBD.

2022- *Mohi Reza. University of Toronto. Member of Supervisory Committee.*
Perpetually Enhancing Digital Learning through Iterative Field Experimentation.

2022 *Zhen Li, University of Toronto. Non-Supervisory Committee Member.*
Enabling Consistent Workspaces Across Contexts For Information Workers

2020- *Tom Veuskens, Hasselt University. External Member of Supervisory Committee.*
Advancing Design Reuse through Intelligible Dialogs in Feature-Based CAD Modeling

2020- *Christine Murad. University of Toronto. Member of Supervisory Committee.*
Supporting Voice User Interface Design.

2018-2020 *Zhicong Lu. University of Toronto. Member of Supervisory Committee.*
Supporting Live Streaming in Non-Entertainment Contexts.
Now Assistant Professor at University of Hong Kong.

2017-2018 *Ruta Desai, Carnegie Mellon University. External Member of Supervisory Committee.*
Computational Design Tools for Accessible Robotics
Now Research Scientist at Facebook Reality Labs
[C.103]

2014-2018 *Madeline Gannon, Carnegie Mellon University. External Member of Supervisory Committee.*
Human-Centered Interfaces for Autonomous Fabrication Machines
Now Researcher at NVIDIA Robotics
[C.75, C.67]

2013-2017 *Anthony Chen, Carnegie Mellon University. External Member of Supervisory Committee.*

Making Fabrication Real: Fabrication for Real Usage, with Real Objects, by Real People
Now Assistant Professor at UCLA
[C.60, C.62, C.68, C.96, C.81]

2010-2013 *Parmit Chilana, University of Washington. External Member of Supervisory Committee.*
Supporting Users After Software Deployment through Selection-Based Crowdsourced Contextual Help
Now Associate Professor at Simon Fraser University
[C.46, C.29, c.1]

Postdoctoral Fellows

2023- *Sangho Suh, University of Toronto, Primary Supervisor.*

2023- *Ludwig Sidenmark, University of Toronto, Primary Supervisor.*
[C.152, C.159]

2020-2022 *Yan Chen, University of Toronto, Primary Supervisor.*
Now Assistant Professor at Virginia Tech
[C.126, C.128, C.134, C.135]

2020-2024 *Mauricio Sousa, University of Toronto*
[C. 119, C.127, C.128, C.129, C.136, C.139, C.141, ea.3]

2015-2016 *Michelle Annett, Autodesk Research. Primary Supervisor.*
Now Principal at MishMashMakers
[J.5, C.70, C.73]

2014-2015 *Rubaiat Habib Kazi, Autodesk Research. Primary Supervisor.*
Now Sr. Research Scientist at Adobe Research
[C.64, C.79]

Visiting Graduate Researchers

Summer 2024 *Thomas Driscoll, University of Guelph. Joint Position with Autodesk Research.*

Summer 2024 *Joanne Leong, Massachusetts Institute of Technology. Joint Position with Autodesk Research.*

Summer 2024 *Weilin Wan, University of Pennsylvania. Joint Position with Autodesk Research.*

Summer 2022 *Amir Jahanlou, Simon Fraser University. Joint position with Autodesk Research.*
[C.138]

Summer 2022 *Stanislaw Nowak, Simon Fraser University. Joint position with Autodesk Research.*
[J.7]

Summer 2021 *Matthew Miller, University of Saskatchewan. Joint position with Autodesk Research.*
[C.139]

Winter 2021 *Sasha Ivanov, University of Calgary. Joint position with Autodesk Research.*
[C.131]

Summer 2020 *Sunggeun Ahn, KAIST. Joint position with Chatham Labs.*
[C.116]

Summer 2020 *Tingyu Cheng, Georgia Tech. Joint position with Chatham Labs.*

Summer 2020 *Sujeath Pareddy, Carnegie Mellon University. Joint position with Chatham Labs.*

Summer 2020 *Mackenzie Leake, Stanford University. Joint position with Chatham Labs.*
Now postdoctoral fellow at MIT.
[C.117]

Summer 2020 *Lukas Gehrke, Technische Universität Berlin. Joint position with Chatham Labs.*

Summer 2020 *Hanif Wicaksono, Harvard University. Joint position with Chatham Labs.*

Summer 2020 *Maximillian Mueller, Harvard University. Joint position with Chatham Labs.*

Winter 2020 *Johann Wentzel, University of Waterloo. Joint position with Autodesk Research.*
Now Ph.D. Student at University of Waterloo
[C.157]

Research Interns – Doctoral Students

Winter 2019 *Balasaravana Thoravi, UC Berkeley. Internship Co-Supervisor.*
[C.105]

Winter 2019 *Minsuk Chang, KAIST. Co-Supervisor. Internship Co-Supervisor.*
Now research scientist and technical leader at Naver AI Lab.
[C.108]

Summer 2018 *Sultan Alharthi, New Mexico State University. Internship Co-Supervisor*
Now Assistant Professor at University of Jeddah.
[C.132]

Summer 2018 *Jun Gong, Dartmouth College. Internship Co-Supervisor.*
Now research scientist at Apple.
[C.102]

Summer 2018 *Matt Whitlock, University of Colorado-Boulder. Internship Co-Supervisor.*
[C.106]

Summer 2018 *Ariel Weingarten, University of California, San Diego. Internship Co-Supervisor.*
[C.104]

Winter 2018 *Teng Han, University of Manitoba. Internship Co-Supervisor.*
Now Associate Professor at Chinese Academy of Sciences
[C.101]

Winter 2018 *Jeremy Warner, UC Berkeley. Internship Co-Supervisor.*
[C.98]

Summer 2017 *Xu Wang, Carnegie Melon University. Internship Co-Supervisor.*
Now Assistant Professor at University of Michigan
[C.92]

Summer 2017 *Nora Willet, Princeton University. Internship Co-Supervisor.*
Now Research Scientist Resident at Pixar Animation Studios
[C.100]

Summer 2017 *Ruta Desai, Carnegie Melon University. Internship Co-Supervisor.*
Now Research Scientist at Facebook Reality Labs
[C.103]

Summer 2017 *Volodymyr Dziubak, University of Manitoba. Internship Co-Supervisor.*
[C.97]

Winter 2017 *Rahul Arora, University of Toronto. Internship Co-Supervisor.*
Now Research Scientist at Meta Reality Labs.
[C.93]

Summer 2016 *Ailie Fraser, University of California, San Diego. Internship Primary Supervisor.*
Now Research Engineer at Adobe.
[C.87]

Summer 2016 *Rahul Arora, University of Toronto. Internship Co-Supervisor.*
Now Research Scientist at Meta Reality Labs.
[C.85]

Summer 2016 *David Ledo, University of Calgary. Internship Co-Supervisor.*
Now Research Scientist at Autodesk Research
[C.86]

Winter 2016 *Seongkook Heo, KAIST. Internship Co-Supervisor.*
Now Assistant Professor at University of Virginia
[C.89]

Winter 2016 *Barrett Ens, University of Manitoba. Internship Co-Supervisor.*
Now Lecturer at Monash University
[C.88, c.3]

Winter 2016 *Jun Xing, University of Hong Kong. Internship Co-Supervisor.*
Now Lead Researcher at miHoYo
[C.82]

Summer 2015 *Raf Ramakers, Hasselt University. Internship Co-Supervisor.*
Now Assistant Professor at Hasselt University
[C.78]

Summer 2015 *Madeline Gannon, Carnegie Mellon University. Internship Primary Supervisor.*
Now Roboticist at NVIDIA Robotics
[C.75]

Winter 2015 *Haijun Xia, University of Toronto. Internship Primary Supervisor.*
Now Assistant Professor at University of California San Diego
[C.71]

Winter 2015 *Barrett Ens, University of Manitoba. Internship Co-Supervisor.*
Now Lecturer at Monash University
[C.69]

Summer 2014 *Jarrod Knibbe, University of Bristol. Internship Primary Supervisor.*
Now Lecturer at University of Melbourne
[C.72]

Summer 2014 *Madeline Gannon, Carnegie Mellon University. Internship Primary Supervisor.*
Now Roboticist at NVIDIA Robotics
[C.67]

Summer 2014 *Fraser Anderson , University of Alberta. Internship Primary Supervisor.*

Now Senior Principal Research Scientist at Autodesk Research
[C.66]

Winter 2014 *Valkyrie Savage , UC Berkeley. Internship Primary Supervisor.*
Now Assistant Professor at University of Copenhagen
[C.65]

Summer 2013 *Anthony Chen , Carnegie Mellon University. Internship Primary Supervisor.*
Now Assistant Professor at University of California Los Angeles
[C.60, C.62]

Summer 2013 *Rubaiat Habib Kazi, National University of Singapore. Internship Primary Supervisor.*
Now Sr. Research Scientist at Adobe Research
[C.61]

Summer 2013 *Ben Lafreniere , University of Waterloo. Internship Primary Supervisor.*
Now Research Scientist at Facebook Reality Labs
[C.59]

Winter 2013 *Fraser Anderson , University of Alberta. Internship Primary Supervisor.*
Now Senior Principal Research Scientist at Autodesk Research
[C.54]

Winter 2013 *Natalia Bogdan, York University. Internship Primary Supervisor.*
[C.55]

Summer 2012 *Tim Chen, National Tsing Hua University. Internship Primary Supervisor.*
Now Senior Lecturer at University of Adelaide
[C.58]

Summer 2012 *Ben Lafreniere, University of Waterloo. Internship Primary Supervisor.*
Now Research Scientist at Facebook Reality Labs
[C.48]

Winter 2012 *Xing-Dong Yang, University of Alberta. Internship Primary Supervisor.*
Now Associate Professor at Simon Fraser University
[C.45]

Summer 2011 *Christian Holz, Hasso Plattner Institute. Internship Primary Supervisor.*
Now Assistant Professor at ETH Zurich
[C.42]

Summer 2011 *Nicholas Kong, UC Berkeley. Internship Primary Supervisor.*
Now Software Engineer at YouTube
[C.29]

Winter 2011 *Michelle Annett , University of Alberta. Internship Primary Supervisor.*
Now Principal at MishMashMakers
[C.37]

Winter 2011 *Michael Ekstrand, University of Minnesota. Internship Co-Supervisor.*
Now Assistant Professor at Boise State University
[C.35]

Summer 2010 *Parmit Chilana , Univ. of Washington. Internship Primary Supervisor.*
Now Associate Professor at Simon Fraser University

[C.29, c.1]

Summer 2010 *Xing-Dong Yang, University of Alberta. Internship Primary Supervisor.*
Now Associate Professor at Simon Fraser University
[C.28]

Winter 2010 *Xiaojun Bi, University of Toronto. Internship Primary Supervisor.*
Now Assistant Professor at Stony Brook University
[C.31]

Summer 2009 *Hyunyoung Song, University of Maryland. Internship Primary Supervisor.*
Now Senior Software Engineer at Android, Google
[C.24]

Summer 2008 *Hyunyoung Song, University of Maryland. Internship Primary Supervisor.*
Now Senior Software Engineer at Android, Google
[C.18]

Research Interns – Masters Students

Summer 2019 *Kimia Kiani, Simon Fraser University. Internship Co-Supervisor.*
Now Full Stack Developer at Thinkific
[C.114]

Winter 2019 *Blaine Lewis, University of Waterloo. Internship Co-Supervisor.*
Now Ph.D. Student at University of Toronto

Summer 2016 Nathaniel Hudson, University of Waterloo. *Internship Co-Supervisor.*
Now Manager, UX & Industrial Design at Ross Video
[C.95]

Summer 2012 *Nikola Banovic , University of Toronto. Internship Primary Supervisor.*
Now Assistant Professor at University of Michigan
[C.47]

Winter 2012 *Nikola Banovic , University of Toronto. Internship Primary Supervisor.*
Now Assistant Professor at University of Michigan
[C.44]

Summer 2011 *Nikola Banovic, University of Toronto. Internship Primary Supervisor.*
Now Assistant Professor at University of Michigan
[C.39]

Winter 2011 *Jennifer Fernquist, University of British Columbia. Internship Primary Supervisor.*
Now User Experience Researcher at Google
[C.36]

Summer 2009 *Julian Lepinski, Queen's University. Internship Primary Supervisor.*
Now Founder and Partner of Debacle Software
[C.23]

Summer 2009 *Mike Rooke, Queen's University. Internship Primary Supervisor.*
Now Software Developer at Sortable
[C.33]

Undergraduate Research Assistants

Summer 2024 [UG.49] *Roy Bernstein, UTEA Project Supervisor (to begin)*

Summer 2024 [UG.48] *Michael Lai, NSERC USRA Project Supervisor (to begin)*

Winter 2024 [UG.47] *Grace Yawen Xiao, Research Project Course Instructor*

Winter 2024 [UG.46] *Michael Lai, Research Project Course Instructor*

Winter 2024 [UG.45] *Faizah Sayyid, Research Project Course Instructor*

Winter 2024 [UG.44] *Hongzip Kim, Research Project Course Instructor*

Winter 2024 [UG.43] *Ayanaa Rahman, Research Project Course Instructor*

Fall 2023 [UG.42] *Chao-Jung Lai, Research Project Course Instructor*

Fall 2023 [UG.41] *Courtney Amm, Research Project Course Instructor*

Fall 2023 [UG.40] *Amy Chen, Research Project Thesis Supervisor.*

Fall 2023 [UG.39] *Qihan Gao, Research Project Thesis Supervisor.*

Fall 2023 [UG.38] *Kieran Kasha, Research Project Thesis Supervisor.*

Fall 2023 [UG.37] *Rahul Hingorani, Research Project Thesis Supervisor.*

Fall 2023 [UG.36] *Chase McDougall, Research Project Thesis Supervisor.*

Summer 2023 [UG.35] *Oliver (Haoze) Huang, Research Project Course Instructor*

Summer 2023 [UG.34] *Harry Ye, Summer Undergrad Research Assistant*

Summer 2023 [UG.33] *Tianyu Zhang, DCS Undergrad Research Award*

Summer 2023 [UG.32] *Daniel Lazaro, Research Project Course Instructor*

Winter 2023 [UG.31] *Issam Arabi, Research Project Course Instructor*

Winter 2023 [UG.30] *Jeannie Jiyun Yoo, Research Project Thesis Supervisor.*

Winter 2023 [UG.29] *Xiaoning Wang, University of Toronto, Undergraduate Volunteer*

Summer 2023 [UG.28] *Leen Al Lababidi, University of Toronto, UTEA Project Supervisor*

Summer 2023 [UG.27] *Connor Burns, University of Toronto, Research Project Course Instructor.*

Winter 2023 [UG.26] *Minyi Ma, University of Toronto, Research Project Course Instructor.*

Winter 2023 [UG.25] *Leen Al Lababidi, University of Toronto, Research Project Course Instructor.*

Fall 2022 [UG.24] *Yviel Castillejos, University of Toronto, Research Project Thesis Supervisor.*

Fall 2022 [UG.23] *Helena Jovic, University of Toronto, Research Project Thesis Supervisor.*

Fall 2022 [UG.22] *Shawn Zhang, University of Toronto, Research Project Thesis Supervisor.*

Fall 2022 [UG.21] *Sixuan Wu, University of Toronto, Research Project Course Instructor.*

[C.139]

Summer 2022 [UG.20] *Angel Yaun, University of Toronto, DCS Undergrad Research Award*

Summer 2022 [UG.19] *Angela Yang, University of Toronto, DCS Undergrad Research Award*
[C.141]

Summer 2022 [UG.18] *Leshi Yang, University of Toronto, DCS Undergrad Research Award*

Summer 2022 [UG.17] *Jim Yang, University of Toronto, DCS Undergrad Research Award*

Summer 2022 [UG.16] *Wilson Gao, University of Toronto, NSERC USRA Project Supervisor.*

Summer 2022 [UG.15] *Kevin Ge, University of Toronto. Research Project Course Instructor.*

Fall 2021 [UG.14] *Stephen Brade, University of Toronto, Research Project Thesis Supervisor.*

Fall 2021 [UG.13] *Yuchen Fan, University of Toronto. Research Project Course Instructor.*

Summer 2021 [UG.12] *Viktar Chyhir, University of Toronto, NSERC USRA Project Supervisor.*
[C.130, C.137]

Summer 2021 [UG.11] *Tianquan (Andy) Di, University of Toronto. Research Project Course Instructor.*
[ea.4]

Winter 2021 [UG.10] *Devamardeep Hayatpur, University of Toronto. Research Project Course Instructor.*
Now Ph.D. student at University of California, San Diego

Fall 2020 [UG.9] *Qian Chen, University of Toronto, Research Project Thesis Supervisor.*

Summer 2020 [UG.8] *Kevin Huang, University of Toronto. Primary Supervisor.*
Now MSc student at Simon Fraser University.
[C.129]

Summer 2020 [UG.7] *Jiahe Lyu, University of Toronto. Research Project Course Instructor.*
[C.127]

Fall 2020 [UG.6] *Zhuoyue Lyu, University of Toronto. Research Project Course Instructor.*

Summer 2015 [UG.5] *Steven Li, University of Waterloo. Internship Primary Supervisor.*
[C.83]

Summer 2015 [UG.4] *Nicholas Beirne, University of Guelph. Internship Co-Supervisor.*
[C.83]

Summer 2008 [UG.3] Jessica Lo, University of Waterloo. *Internship Co-Supervisor.*
[C.19]

Summer 2005 [UG.2] *Nicholas Kong, University of Toronto. Internship Primary Supervisor.*
Now Software Engineer at YouTube
[C.14]

Summer 2003 [UG.1] *Vikas Jain, University of Toronto. Internship Primary Supervisor.*
[J.1]

External Doctoral Examinations

2012 *Mathieu Nancel, Université Paris-Sud XI. Defense Jury Examiner.*

Designing and Combining Interaction Techniques in Large Display Environments
Now Research Scientist at INRIA

E. ADMINISTRATIVE POSITIONS

14. POSITIONS HELD

A. Internal Committees and Organizations

Internal Department Committees

2022-2023 *DCS Graduate Affairs, Committee Member (Department of Computer Science)*
2022-2023 *DCS Graduate Admissions, Co-Chair (Department of Computer Science)*
2022-2023 *SGS Final Oral Examinations, Committee Member (Department of Computer Science)*
2021-2022 *DCS Grad Entrance Scholarship Cluster Coordinator (HCI and Environmental Informatics) (Department of Computer Science)*
2020-2021 *DCS Grad Entrance Scholarship Cluster Coordinator (HCI and Environmental Informatics) (Department of Computer Science)*
2019-2020 *DCS Faculty Recruiting Committee (Robotics and HCI) (Department of Computer Science)*
2019-2020 *SGS Final Oral Examinations, Committee Member (Department of Computer Science)*
2019-2020 *Grad Visit Day, Committee Member (Department of Computer Science)*
2019-2020 *SGS Final Oral Examinations, Committee Member and Chair (Department of Computer Science)*
2018-2019 *Professional Masters Admissions, Committee Member (Department of Computer Science)*
2018-2019 *DGP Lab Grad Recruitment Day Coordinator (Department of Computer Science)*

Internal Faculty Committees

2019-2020 *Department of Computer Science Chair Search Committee (Faculty of Arts and Science)*
2023-2024 *University of Toronto Research Ethics Board (REB)Member*

B. External Committees and Organizations

Organization Recognitions

2018 *ACM Senior Member*

The Senior Members Grade recognizes those ACM members with at least 10 years of professional experience and 5 years of continuous Professional Membership who have demonstrated performance through technical leadership, and technical or professional contributions.

External Organization Management

TUX Toronto User Experience Founding Member and Editorial Board Member (2015-2022)

External Conference Chairing and Management

2023 *ACM UIST Symposium on User Interface Software and Technology, Lasting Impact Award*
2022 *ACM UIST Symposium on User Interface Software and Technology, Lasting Impact Award*
2020 *ACM CHI Conference on Human Factors in Computing Systems, Awards Chair*
2019- *ACM CHI Conference on Human Factors in Computing Systems, Steering Committee Vice Chair*
2016-2019 *ACM CHI Conference on Human Factors in Computing Systems, Steering Committee Member*
2019 *ACM CHI Conference on Human Factors in Computing Systems, Awards Chair*
2018 *ACM CHI Conference on Human Factors in Computing Systems, Subcommittee Chair*
2017 *ACM ISS International Conference on Interactive Surfaces and Spaces, Program Chair*
2017 *ACM CHI Conference on Human Factors in Computing Systems, Subcommittee Chair*
2015 *ACM UIST Symposium on User Interface Software and Technology, Program Chair*
2014 *ACM CHI Conference on Human Factors in Computing Systems, Technical Program Chair*
2013 *ACM CHI Conference on Human Factors in Computing Systems, Subcommittee Chair*
2010 *ACM CHI Conference on Human Factors in Computing Systems, alt.chi Chair*
2009 *ACM CHI Conference on Human Factors in Computing Systems, alt.chi Chair*

External Conference Program Committees

2024 *ACM CHI Conference on Human Factors in Computing Systems*
2021 *ACM CHI Conference on Human Factors in Computing Systems*

2019 *ACM UIST Lasting Impact Award Committee*
2016 *ACM CHI Conference on Human Factors in Computing Systems*
2014 *ACM UIST Symposium on User Interface Software and Technology*
2012 *ACM CHI Conference on Human Factors in Computing Systems*
2011 *ACM UIST Symposium on User Interface Software and Technology*
2011 *ACM CHI Conference on Human Factors in Computing Systems*
2011 *IEEE 3DUI Symposium on 3D User Interfaces*
2010 *ACM UIST Symposium on User Interface Software and Technology*
2010 *ACM International Conference on Interactive Tabletops and Surfaces*
2010 *ACM CHI Conference on Human Factors in Computing Systems*
2010 *IEEE 3DUI Symposium on 3D User Interfaces*
2009 *ACM UIST Symposium on User Interface Software and Technology*
2009 *ACM International Conference on Interactive Tabletops and Surfaces*
2009 *IEEE 3DUI Symposium on 3D User Interfaces*
2008 *ACM UIST Symposium on User Interface Software and Technology*
2008 *IEEE International Workshop on Tabletops and Interactive Surfaces*

External Conference Paper Reviewing
ACM CHI Conference on Human Factors in Computing Systems
ACM Graphics Interface Conference
ACM ITS Conference on Interactive Tabletops and Surfaces
ACM SIGGRPAH Conference on Computer Graphics and Interactive Techniques
ACM SIGGRAPH ASIA Conference on Computer Graphics and Interactive Techniques in Asia
ACM UIST Symposium on User Interface Software and Technology
Eurographics Annual Conference of the European Association for Computer Graphics
Eurographics Joint Virtual Reality Conference
IEEE Symposium on 3D User Interfaces
IEEE Information Visualization Conference
IEEE International Workshop on Tabletops and Interactive Surfaces
IEEE International Symposium on Mixed and Augmented Reality

External Journal Paper Reviewing
ACM Transactions on Computer-Human Interaction
Elsevier International Journal of Human-Computer Studies
IEEE Computer Graphics and Applications
IEEE Pervasive Computing
IEEE Transactions on Visualization and Computer Graphics
Taylor & Francis Human-Computer Interaction
Elsevier Computer-Aided Design

External Grant Reviewing
2021 *Universities Canada*
2019 *Natural Sciences and Engineering Research Council of Canada (NSERC)*
2018 *Natural Sciences and Engineering Research Council of Canada (NSERC)*

External Institutional Project Reviews
2018 *INRIA Project Review Seminar – Interaction and Visualization*

F. OTHER RELEVANT INFORMATION

15. **Industry Technology Transfer**

2019 *Autodesk Fusion Command Map [J.3, C.22, C.33, C.56]*
The command map is a powerful data-driven tool that helps our users learn and grow simply by getting their work done with Autodesk tools. The plug-in, "Command Map for Autodesk® Fusion® 360™" was released on the Fusion 360 App Store for both Widows and Mac. The plug-in provides users with an interactive view of a user's current skills, provides comparisons with

industry groups, and recommends personalized learning materials. The development of command map was heavily inspired by my 10 year research program on software learning, and used concepts from my publications on CommunityCommands and AppMap.

2016 *Autodesk Sketchbook Motion [C.61]*
Draco is a new system that allows users to add rich animation effects to illustrations, using a sketch-based interface. Originally published at ACM CHI 2014, a technology preview was subsequently demonstrated at the SIGGRAPH 2014 Studio. The system has now been released as a standalone product, branded as Autodesk Sketchbook Motion. The application has been downloaded over one million times and was awarded by Apple as the iPad 2016 App of the Year. I served as the supervisor for the research project, and a design consultant for the productization effort.

2014 *Meshmixer Tubes [C.65]*
Our work published at ACM UIST 2014 explored the digital fabrication of interactive and electronic 3D models. We introduced a general technique for routing internal pipes through the interior of 3D models. Our path routing algorithm utilizes a physics-based simulation to minimize pipe bending energy, allowing easy insertion of media post-print. The work has now been released as an official feature of Autodesk Meshmixer 2.6. I served as the supervisor for the research project

2014 *Autodesk Screencast [C.27]*
My research on the Chronicle system, originally published at ACM UIST 2010, was developed and released by Autodesk Research as a technology preview called "Project Chronicle". The project is a community driven learning system that allows users to capture video and workflow meta-data, and share the content on a web-based system. The web player receives an upload and automatically generates a video tutorial, with an interactive timeline marked up with all the commands, settings, and products which were used in the workflows. In 2014 the system was officially launched as a product, branded as Autodesk Screencast. The web system has received over 3 000 000 site visitors, and has generated over 100 000 tutorial videos generated by the user community. I was the lead researcher for the project, and the lead designer for the productization.

2010 *Autodesk ToolClip™ Videos [C.25]*
ToolClips are short videos embedded within software tooltips that provide real-time contextual assistance. My research, published at ACM CHI 2010, demonstrated that they offered significant advantages for the purpose of learning to use new software tools and functionality. Subsequent to publication, ToolClips were developed as a multi-product Autodesk component. ToolClip videos are now a registered trademark of Autodesk and can be found in all of Autodesk's major software applications, including AutoCAD, Revit, 3DSMax, Inventor, and Maya. I was the lead researcher for the project, and the lead designer for the productization.

2010 *CommunityCommands [J.3, C.22, C.56]*
The CommunityCommands research project was originally published at the ACM UIST 2009 conference. This system applies recommender system technology to the domain of software learning. Collaborative filtering algorithms are used to suggest new commands for users to try, based on their personalized usage patterns. Subsequent to its publication, the system was developed into a fully-functional plug-in for Autodesk AutoCAD, and released as a technology preview to the public. A research paper describing the deployment received the AAAI 2014 Innovative Application Award for its use of artificial intelligence technology within a deployed system. I was a research collaborator for the research project, and a design consultant for its productization.

16. **Selected Media and Press**
ABScribe: Rapid Exploration of Multiple Writing Variations in Human-AI Co-Writing Tasks using Large Language Models, *Montreal AI Ethics Institute*, January 2024.
Researchers develop interactive 'Stargazer' camera robot that can help film tutorial videos, *U of T News*, May 2023.
AI code generators could make learning to code easier for young students, new research shows,

U of T CS News, March 2023.
Tovi Grossman awarded a Sloan Research Fellowship, *U of T Celebrates*, February 2021.
Four Arts & Science researchers receive 2021 Sloan Research Fellowships, *A&S News*, February 2021.
Tovi Grossman receives E.W.R Steacie Memorial Fellowship, *U of T Celebrates*, November 2020.
Arts and Science computer scientist named NSERC/Autodesk Industrial Research Chair in Human-Computer Interaction, *U of T Faculty of Arts and Science News*, October 2019.
Universal Robots at Autodesk for human-robot collaboration in construction, *Design World*, July 2018.
U of T and Autodesk researchers design 2D-3D software for augmented reality drawing, *U of T News*, April 2018.
The Scientist Who Is Making 3D Printing More Human, *Popular Scienc*e, September 2015.
'Tactum' By MadLabs & Autodesk lets you design 3D printed wearables directly on your body, *3ders.org*, June 2015.
Design 3-D Printed Accessories Using Your Arm As The Interface *Fast Company*, June 2015.
'Tactum' By MadLabs — Create 3D Printable Designs Using The Human Body As The Interface , *3DPrint.com*, April 2015.
What if We Could Design Wearables Right on Our Skin?, *Wired*, March 2015.
PipeDream - Autodesk Working on Way to Integrate Tubes for Electronic Components within 3D Prints, *3DPrint.com*, Oct 2014.
Autodesk's Draco Lets You Animate An Illustration In Seconds, *Fast Company*, May 2014.
Draco: Bringing Illustration to Life with Kinetic Textures. *HOW Design*, April 2014.
Create Training Videos with Project Chronicle, *Cadalyst*, February 2014.
Magic Finger device suggests new day for calling up content. *Phys.org*, October 2012.
'Magic Finger' Swipes Smartphone Remotely. *Discovery News*, October 2012.
Here's a real close call: Implanting your mobile phone under your skin. *Metro UK*, June 2012.
Implanted User Interfaces Television Interview. *The Discovery Channel's Daily Planet*, May 2012.
Gadgets work under your skin – but are you ready? *NewScientist*, May 2012.
Implanted User Interfaces: I've Got You Under My Skin. *TXCHNOLOGIST*, May 2012.
Researchers Push Implanted User Interfaces. *Slashdot*, May 2012.
Implanted User Interface Gives Patients New Options. *InformationWeek*, May 2012.
Under Your Skin: The First Sub-Dermal Implants Get Tested. *Tested*, May 2012.
User Interface Gets Under Your Skin. *Engineering On The Edge*, May 2012.
HoverWidgets: Improving the Functionality of Pen-based interfaces. *Mobile Enterprise*, June 2006.
Once More, With Volume. *MIT Tech Review*, Feb 2005.
ShapeTape Curve Editing Television Demo. *CityPulse24 Interview*, May 2003.
ShapeTape Curve Editing Television Demo. *Discovery Channel Daily Planet*, September 2003.
The changing shape of software. *University of Toronto Magazine*, July 2003.
Team designs twist on software. *Science Daily*, 16 Apr 2003
Gazing into the crystal ball. *The Toronto Star*, 20 Jan 2003.
Shaping the future of 3-D. *Varsity*, 24 Sep 2002.