lisaelkin

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Ph.D. student, Computer Science (HCI)

research statement

My research focuses on creating input devices and interaction techniques and studying various aspects of their usability using fabrication and hardware prototyping, software development, and quantitative human-subject experiments. Other research interests include entertainment technology, and creating new quantitative methods for data analysis.

education

2018 - present (GPA: 4.0/4.0)

Ph.D. Computer Science & Engineering - *University of Washington*

Human Computer Interaction

Advisor: Jacob O. Wobbrock

2015 - 2018 (GPA: 95/100)

MMath Computer Science - *University of Waterloo*

Human Computer Interaction

Thesis: Contact-sensing Input Device Manipulation and Expertise

Advisor: Daniel Vogel

Note: Extra time in degree due to voluntarily taking all core CS undergrad courses

2013 - 2015 (GPA: 3.9/4.0)

Master of Entertainment Technology - *Carnegie Mellon University*

Interactive experiences and installations as a programmer and project manager

2008 - 2012 (GPA: 93/100)

BMath Combinatorics & Optimization Joint Pure Math, French Certificate - *University of Waterloo*

With Distinction - Dean's Honours List

skills

programming and hardware

Python, Java, Processing, C, C++, R, JavaScript, C#, Racket, MATLAB, PHP, Unity

Arduino, Sensors, Electronic Prototyping

design and project management

3D modelling (3ds Max), 3D printing complex structures, Scrum, Photoshop

publications and exhibits

master's thesis

Lisa Elkin (2018).

Contact-sensing Input Device Manipulation and Recall - *University of Waterloo.*

http://hdl.handle.net/10012/13205

- Used 3d modelling, 3d printing, microcontroller, IMU, Arduino programming, Processing code (Java-based language, ~ 15,000 lines), and machine learning to create conductive cuboid-shaped pen-like input device.
- Designed, implemented, ran, and analyzed two quantitative human-subjects experiments:
  - Impact of device size on manipulation time using plastic mock-ups and computer vision.
  - Users' ability to remember commands on device corners, edges, and sides.

technical reports

Lisa Elkin, Ting Kei Pong, Stephen Vavasis (2013).
Convex Relaxation for Finding Planted Influential Nodes in a Social Network - *University of Waterloo.*
http://arxiv.org/abs/ 1307.4047

- Completed literature review. Established conditions for generative model of social network and contributed to proof that convex optimization can recover exact influence optimizer using this generative model.

invited demos

Lisa Elkin*, Alex Hu*, Yan Jin*, Xuyan Ke*, Jack Koo*, Janet Lin*, Tim Rosko*, Brenda Harger, Ralph Vituccio (2014).
Feed: A Massive Outdoor Game to Combat World Hunger - *Games for Change Festival.*

- Created mobile, geo-cached outdoor game motivated by experiences of food distribution volunteers.
- Interest from media outlets and organizations including World Food Program USA.
- Role: Project manager

* Equal contributors

interactive installations

Lisa Elkin*, Hyunghwan Byun*, Yu-Cheng (Larry) Chang*, Rose Heid*, Maoyang Li*, Qing Mao*, Adarsh Telekadan Puthiyaveettil*, Scott Stevens, Jessica Trybus (2015).
Energy Lab 2 (Vis Viva): Seismic Mapping and Geology Education Installation - *Elizabeth Forward School District.*

- Created interactive installation to teach middle school students about seismic mapping and rock properties.
- Focused on UI and gameplay programming using C# in Unity.
- Role: Programmer

* Equal contributors

Lisa Elkin*, Jimit Bhalani*, Casey Ging*, Adarsh Pavani*, Juan Ramirez*, Shirley Saldamarco, Scott Stevens (2014).
Energy Lab 1 (Infinite): Large Touch-screen Dome for Science Installation - *Elizabeth Forward School District.*

- Created 4ft wide, 2ft tall, diffuse illumination, hemispherical touch-screen.
- Created game for dome to teach middle school students about solar energy.
- Featured on CMU homepage (December 2015).
- Role: Project Manager

* Equal contributors

scholarships and awards

NSERC Postgraduate Scholarship, Doctoral (PGS D), 2018-2020
$21,000/year scholarship based on research potential and academic merit.

Dinning - Wolf Endowed Regental Fellowship in Computer Science & Engineering, 2018
$25,000 fellowship based on academic merit.

Ontario Graduate Scholarship, 2017
$15,00 scholarship based on academic merit.

University of Waterloo President's Graduate Scholarship, 2017
$10,000 scholarship based on academic merit.

NSERC Postgraduate Scholarship, Masters (PGS M), 2014
$17,300 scholarship based on research potential and academic merit.

NSERC Canada Graduate Scholarship, Masters (CGS M), 2014
(cannot be held at international university, declined to accept PGS M)
$17,500 scholarship based on research potential and academic merit.

Ontario Graduate Scholarship, 2014
(declined to accept NSERC PGS M)
$15,000 scholarship based on academic merit.

Margaret A. Ryan Award, 2012
$100 for receiving top grade in french linguistics course.

NSERC Undergraduate Student Research Award, 2012
$4,500 based on academic merit.

University of Waterloo Women in Mathematics Scholarship, 2012
$1,000 awarded to top female undergraduate math student in academic year.

University of Waterloo, Faculty of Mathematics Semester Dean's Honours, Winter 2009 - Fall 2012

work experience

September 2018 - Present
University of Washington, ACE Lab - *Research Assistant*
Advisor: Jacob O. Wobbrock
- Creating a new pre-processing method for quantitative data analysis.

May 2018 - July 2018
Microsoft Research, EPIC Research Group - *Research Intern*
Advisor: Ken Hinckley

June 2016 - April 2018
University of Waterloo, School of Computer Science - *Research Assistant*
Advisor: Daniel Vogel
- Designed, created, and evaluated new tangile pen-like input device.

June 2015 - August 2015
Carnegie Mellon University, School of Computer Science - *Programmer and Lead Designer*
- Created web-based, interactive, computer science education tools.

June 2012 - August 2012
University of Waterloo, Faculty of Mathematics - *Undergraduate Research Assistant*
- Research on influence maximization in social networks.

teaching experience

2015 - 2018
University of Waterloo, School of Computer Science - *Graduate Teaching Assistant*

Lab Instructor, CS106: Intro to Computer Programming 2 (Winter 2016, 2018)
- Ran lab with up to 60 non-stem students teaching them to program in Processing.

Lab Instructor, CS105: Intro to Computer Programming 1 (Fall 2015, 2016, 2017)
- Ran lab with up to 60 non-stem students teaching them to program in Processing.

Teaching Assistant, CS449/649: Human-Computer Interaction (Spring 2017)
- Graded and gave in-person feedback on semester-long HCI student projects.

Teaching Assistant, CS349: User Interfaces (Winter 2016)
- Graded assignments in Java and helped students in office hours.

Teaching Assistant, CS234: Data Types and Structures (Spring 2016)

- Graded data structures proofs and pseudo-code on assignments.

Teaching Assistant, CS116: Intro to Computer Science (Winter 2016)

- Graded weekly Racket and Python programming assignments.

2014

Carnegie Mellon University, Entertainment Technology - *Graduate Teaching Assistant*

Festival Teaching Assistant, BVW: Building Virtual Worlds (Fall 2014)

- Organized event to showcase students' work to over 500 industry guests.

2010 - 2012

University of Waterloo, Faculty of Mathematics - *Undergraduate Teaching Assistant*

Tutor, MATH138: Calculus 2 for Honours Math (Winter 2012)

Tutor, MATH135: Algebra for Honours Math (Fall 2011)

Tutor, MATH136: Linear Algebra 1 for Honours Math (Winter 2011)

Grader, MATH235: Linear Algebra 2 for Honours Math (Fall 2010)

service

UIST - *Student Volunteer* **(**2017, 2019)
MobileHCI 2019 Late Breaking Results - *Reviewer* (2019)