

MATTHEW BREHMER, PHD

CURRICULUM VITAE, APR. 2019

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REFERENCES

Dr. Tamara Munzner
PROFESSOR,
COMPUTER SCIENCE,
UNIV. BRITISH COLUMBIA
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Dr. Ken Hinckley
PRINCIPAL RESEARCHER,
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Dr. Bongshin Lee
SENIOR RESEARCHER,
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Dr. Joanna McGrenere
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COMPUTER SCIENCE,
UNIV. BRITISH COLUMBIA
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Dr. Petra Isenberg
RESEARCH SCIENTIST,
AVIZ RESEARCH GROUP,
INRIA SACLAY
petra.isenberg@inria.fr
+33-1-74-85-42-90

I am a recognized expert in the field of **information visualization**, a practice that brings together data analysis, software development, HCI / UX methods, and design. My open-source visualization work can be seen and used online and in Microsoft's Power BI. I have spoken about my work at venues such as IEEE VIS, ACM CHI, and OpenVisConf, and I have published several papers about my work in IEEE Transactions on Visualization & Computer Graphics, the top visualization journal.

EXPERTISE

VISUALIZATION AND INTERFACE DESIGN

Designing and developing visualization tools and techniques for analyzing and presenting data.

EXAMPLE PROJECTS: *Timeline Storyteller*, *Portfolio Sandbox*, *SoundConsensus*, *ShinyFork*.

RELATED PUBLICATIONS: C7, J8, J6, J5, T3

QUANTITATIVE HUMAN FACTORS RESEARCH

Designing experiments to understand human capabilities with respect to perception, attention, and interaction; identifying implications for interface and visualization design.

RELATED PUBLICATIONS: J8, C6, C4, T2, C3, T1

QUALITATIVE HUMAN FACTORS RESEARCH

Evaluating existing data visualization processes, work-in-progress designs, and deployed systems via work domain analyses, think-aloud protocols, and chauffeured demos.

RELATED PUBLICATIONS: J5, J2, W3, W2, TR1, T2

APPLICATION DOMAINS

DATA JOURNALISM AND STORYTELLING

Designing, developing, and promoting the use of visualization tools for journalists, educators, and storytellers that allow them to expressively present information to their audiences.

RELATED PUBLICATIONS: C7, J7, J6, C5, J4, W5, BC1

As part of my PhD, I conducted case studies of journalists who used the *Overview Project* to investigate large document corpora, resulting in implications for visualizing hierarchical text data.

RELATED PUBLICATION: J2

RESOURCE MANAGEMENT AND CONSERVATION

As part of my PhD, I designed visualization techniques for interactively monitoring patterns of energy usage in portfolios of buildings, consulting regularly with stakeholders.

RELATED PUBLICATION: J5

PERSONAL HEALTH AND WELLNESS

In my MSc, I evaluated aspects of C-TOC, an online self-administered assessment tool for the early detection of cognitive decline; I focused on how interruptions impact assessment performance.

RELATED PUBLICATIONS: C4, J3, T2, W1

Prior to my MSc, I studied the impact of physical exertion on cognitive performance in active games; I developed GAIM, a toolkit allowing players with different input devices to play together.

RELATED PUBLICATIONS: C2, C1, T1

EDUCATION

DOCTOR OF PHILOSOPHY, COMPUTER SCIENCE

2011 - 2016

University of British Columbia (UBC), Vancouver, Canada

THESIS: *Why Visualization? Task Abstraction for Analysis and Design*

SUPERVISORS: T. Munzner (UBC CS), J. McGrenere (UBC CS), R. Rensink (UBC Psych.)

EXAMINORS: J. Dykes (City Univ., London), A. Hermida (UBC Journ.), G. Carenini (UBC CS)

RELATED PUBLICATIONS: T3, J1, J2, J5, TR1, W2

MASTER OF SCIENCE, COMPUTER SCIENCE

2009 - 2011

Specialization in Human-Computer Interaction

University of British Columbia (UBC), Vancouver, Canada

THESIS: *Usability and the Effects of Interruption in C-TOC: Self-Administered Cognitive Testing on a Computer*

SUPERVISORS: J. McGrenere (UBC CS), C. Jacova (UBC Med.)

THESIS READER: P. Graf (UBC Psych.)

RELATED PUBLICATIONS: C4, J3, W1, T2

BACHELOR OF COMPUTING

2004 - 2009

Specialization in Cognitive Science with Professional Internship

Queen's University, Kingston, Canada

THESIS: *Assessing the Effect of Exercise Intensity on Cognitive Task Performance in an Exercise Video Game*

SUPERVISOR: T. C. N. Graham (Queen's Univ. CS)

RELATED PUBLICATION: T1

EMPLOYMENT EXPERIENCE

Postdoctoral Researcher

2016 - 2019

Microsoft Research

Redmond, USA

MANAGERS: KORI INKPEN [2016/10 - 2017/04], KEN HINCKLEY [2017/04 - 2019/04]

Graduate Research Assistant

2009 - 2016

University of British Columbia Department of Computer Science
Vancouver, Canada

Graduate Research Intern

2015

Microsoft Research

Redmond, USA

MENTOR: BONGSHIN LEE

Mitacs Graduate Research Intern

2013 - 2014

Pulse Energy (now a division of EnerNOC)
Vancouver, Canada

Graduate Teaching Assistant

2009 - 2011

University of British Columbia Department of Computer Science
Vancouver, Canada

Research Assistant

2009

Queen's University School of Computing
Kingston, Canada

User Interface Design Intern

2007 - 2008

EMC Corporation (now Dell EMC)
Toronto, Canada

Information Technology Staff and Web Developer

2006

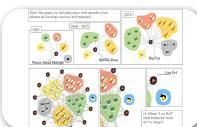
Killam Properties, Inc.
Halifax, Canada

PUBLICATIONS

Author copies of these publications are available at mattbrehmer.github.io/#pubs.

J = journal article, C = conference proceedings, W = workshop paper, BC = book chapter,
TR = technical report, T = thesis, P = poster. METRICS (where available): AR = acceptance rate, H5 = H5
index, CC = citation count (GOOGLE SCHOLAR, APR. 2019). My current H index is 11.

PEER-REVIEWED JOURNAL AND CONFERENCE PAPERS



DataToon: Drawing Dynamic Network Comics With Pen + Touch Interaction

Nam Wook Kim, Nathalie H. Riche, Benjamin Bach, Guanpeng A. Xu, Matthew Brehmer,
Ken Hinckley, Michel Pahud, Haijun Xia, Michael McGuffin, and Hanspeter Pfister.
To appear in *Proceedings of the 2019 ACM Conference on Human Factors in Computing Systems (CHI)* [H5: 86] [AR: 24%].

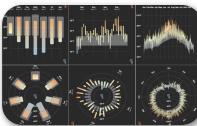
C8



Timeline Storyteller: The Design & Deployment of an Interactive Authoring Tool for Expressive Timeline Narratives

Matthew Brehmer, Bongshin Lee, Nathalie H. Riche, David Tittsworth, Kate Lytvynets,
Darren Edge, and Christopher White.
Proceedings of the 2019 Computation + Journalism Symposium.

C7



Visualizing Ranges over Time on Mobile Phones: A Task-Based Crowdsourced Evaluation

Matthew Brehmer, Bongshin Lee, Petra Isenberg, and Eun Kyoung Choe.
In Volume 25, Issue 1 (Jan. 2019) of *IEEE Transactions on Visualization and Computer Graphics* [H5: 63] (Presented at IEEE VIS 2018) [AR: 25%] [CC: 1].

J8



Charticator: Interactive Construction of Bespoke Chart Layouts

Donghao Ren, Bongshin Lee, and Matthew Brehmer.
In Volume 25, Issue 1 (Jan. 2019) of *IEEE Transactions on Visualization and Computer Graphics* [H5: 63] (Appeared at IEEE VIS 2018) [AR: 25%] [CC: 3].



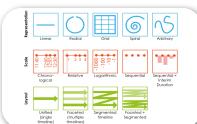
J7



What's the Difference?: Evaluating Variants of Multi-Series Bar Charts for Visual Comparison Tasks

Arjun Srinivasan, Matthew Brehmer, Bongshin Lee, and Steven Drucker.
In *Proceedings of the 2018 ACM Conference on Human Factors in Computing Systems (CHI)* [H5: 86] [AR: 26%] [CC: 2].

C6



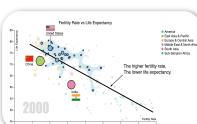
Timelines Revisited:

A Design Space and Considerations for Expressive Storytelling

Matthew Brehmer, Bongshin Lee, Benjamin Bach, Nathalie H. Riche,
and Tamara Munzner.

In Volume 23, Issue 9 (Sept. 2017) of *IEEE Transactions on Visualization and Computer Graphics* [H5: 63] (Presented at IEEE VIS 2017) [CC: 39].

J6



ChartAccent: Annotation for Data-Driven Storytelling

Donghao Ren, Matthew Brehmer, Bongshin Lee, Tobias Höllerer,
and Eun Kyoung Choe.

In *Proceedings of the 2017 IEEE PacificVis Symposium* [H5: 21] [CC: 17].

C5



Matches, Mismatches, and Methods:

Multiple-View Workflows for Energy Portfolio Analysis

Matthew Brehmer, Jocelyn Ng, Kevin Tate, and Tamara Munzner.
In Volume 22, Issue 1 (Jan. 2016) of *IEEE Transactions on Visualization and Computer Graphics* [H5: 63] (Presented at IEEE VIS 2015) [AR: 21%] [CC: 17].

J5



TimeLineCurator:

Interactive Authoring of Visual Timelines from Unstructured Text

Johanna Fulda, Matthew Brehmer, and Tamara Munzner.

In Volume 22, Issue 1 (Jan. 2016) of *IEEE Transactions on Visualization and Computer Graphics* [H5: 63] (Appeared at IEEE VIS 2015) [CC: 32].



C-TOC (Cognitive Testing on Computer):

Investigating the Usability and Validity of a Novel Self-administered Cognitive Assessment Tool in Aging and Early Dementia

Claudia Jacova, Joanna McGrenere, Hyunsoo S. Lee, William Wang, Sarah Le Huray, Emily F. Corenblith, Matthew Brehmer, Charlotte Tang, Sherri Hayden, B. Lynn Beattie, and Ging-Yuek R. Hsiung.

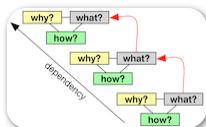
In *Alzheimer Disease and Associated Disorders* (July 2015) [CC: 6].



Overview: The Design, Adoption, and Analysis of a Visual Document Mining Tool For Investigative Journalists

Matthew Brehmer, Stephen Ingram, Jonathan Stray, and Tamara Munzner.

In Volume 20, Issue 12 (Dec. 2014) of *IEEE Transactions on Visualization and Computer Graphics* [H5: 63] (Presented at IEEE VIS 2014) [AR: 23%] [CC: 58].

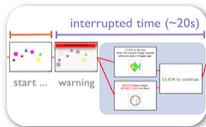


A Multi-Level Typology of Abstract Visualization Tasks

Matthew Brehmer and Tamara Munzner.

In Volume 19, Issue 12 (Dec. 2013) of *IEEE Transactions on Visualization and Computer Graphics* [H5: 63] (Presented at IEEE VIS 2013) [AR: 25%] [CC: 305].

QS THE MOST CITED IEEE INFOVIS PAPER SINCE 2013.



Investigating Interruptions in the Context of

Computerized Cognitive Testing for Older Adults

Matthew Brehmer, Joanna McGrenere, Charlotte Tang, and Claudia Jacova.

In *Proceedings of the 2012 ACM Conference on Human Factors in Computing Systems (CHI)* [H5: 86] [AR: 23%] [CC: 9].



The Haptic Crayola Effect:

Exploring the Role of Naming in Learning Haptic Stimuli

Inwook Hwang, Karon MacLean, Matthew Brehmer, Jeff Hendy, Andreas Sotirkopoulos, and Seungmoon Choi.

In *Proceedings of the 2011 IEEE World Haptics Conference* [CC: 9].



Activate Your GAIM: A Toolkit for Input in Active Games

Matthew Brehmer, Nicholas Graham, and Tadeusz Stach.

In *Proceedings of the 2010 ACM Future Play Conference* [CC: 13].



Classifying Input for Active Games

Tadeusz Stach, Nicholas Graham, Matthew Brehmer and Andreas Hollatz.

In *Proceedings of the 2009 ACM Conference on Advances in Computer Entertainment Technology (ACE)* [CC: 17].



Reflecting on the Evaluation of Visualization Authoring Systems

Donghao Ren, Bongshin Lee, Matthew Brehmer, and Nathalie H. Riche.
In the *Proceedings of the 2018 BELIV Workshop: Evaluation and Beyond - Methodological Approaches for Visualization*.

W5



Data Visualization on Mobile Devices

Bongshin Lee, Matthew Brehmer, Eun Kyung Choe, Petra Isenberg, Ricardo Langer, and Raimund Dachselt.
In *Extended Abstract Proceedings of the 2018 ACM Conference on Human Factors in Computing Systems (CHI)* [CC: 1].

W4



Visualizing Dimensionally-Reduced Data:

Interviews with Analysts and a Characterization of Task Sequences
Matthew Brehmer, Michael Sedlmaier, Stephen Ingram, and Tamara Munzner.
In *Proceedings of the 2014 ACM BELIV Workshop: Beyond Time and Errors - Novel Evaluation Methods for Visualization* [CC: 48].

W3



Pre-Design Empiricism for Information Visualization:

Scenarios, Methods, and Challenges

Matthew Brehmer, Sheelagh Carpendale, Bongshin Lee, and Melanie Tory.
In *Proceedings of the 2014 ACM BELIV Workshop: Beyond Time and Errors - Novel Evaluation Methods for Visualization* [CC: 19].

W2



A Tale of Two Studies: Investigating the Impact of Interruptions on Task Performance in Older Adults

Matthew Brehmer, Charlotte Tang, Joanna McGrenere, and Claudia Jacova.
In the *Work-In-Progress Proceedings of the the 2011 GRAND NCE AGM*.

W1

OTHER PUBLICATIONS: BOOK CHAPTERS, TECHNICAL REPORTS, POSTERS, THESES



Evaluating Data-Driven Stories & Storytelling Tools

Fereshteh Amini*, Matthew Brehmer*, Gordon Bolduan, Christina Elmer, and Benjamin Wiederkehr (* contributed equally).
In *Data-Driven Storytelling*, edited by Sheelagh Carpendale, Nicholas Diakopoulos, Christophe Hurter, Nathalie H. Riche (CRC Press, 2018).

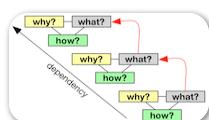
BC1



Demonstrating the Value of Visualization:

Highlights from the 2017 PacificVis Visual Data Storytelling Contest
Matthew Brehmer, Kyungwon Lee, Ivan Viola, Jinwook Seo, and Bongshin Lee.
In *Poster Proceedings of the 2017 IEEE VIS Conference*.

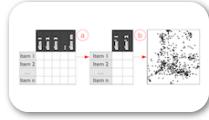
P1



Why Visualization? Task Abstraction for Analysis and Design

Matthew Brehmer.
University of British Columbia PhD Dissertation (2016).

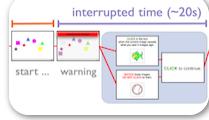
T3



Dimensionality Reduction in the Wild: Gaps and Guidance

Michael Sedlmaier, Matthew Brehmer, Stephen Ingram, and Tamara Munzner.
University of British Columbia Technical Report TR-2012-03 (2012) [CC: 24].

TR1



Usability and the Effects of Interruption in C-TOC:

Self-Administered Cognitive Testing on a Computer

Matthew Brehmer.
University of British Columbia MSc Thesis (2011) [CC: 3].

T2



Assessing the Effect of Exercise Intensity on Cognitive Task Performance in an Exercise Video Game

Matthew Brehmer.
Queen's University B.Comp Thesis (2009).

T1

TALKS

Slides available at mattbrehmer.github.io/#talks.  = video available.

Constraints and Opportunities for Expressive Information Design Tableau Research (Seattle, USA)	2019 / 04 / 09
Visualizing Information on Mobile Phones: Recent Experiments, Novel Interactions, & Prospects for the Future Microsoft Research (Redmond, USA)	2019 / 03 / 13
Constraints and Opportunities for Expressive Information Design Uncharted Software (Toronto, Canada)	2019 / 03 / 01
Considerations for Interactive & Expressive Information Design Tools University of Ontario Institute of Technology (Oshawa, Canada)	2019 / 02 / 27
Considerations for Interactive & Expressive Information Design Tools Autodesk Research (Toronto, Canada)	2019 / 02 / 26
Timeline Storyteller: The Design & Deployment of an Interactive Authoring Tool for Expressive Timeline Narratives The Computation + Journalism Symposium (Coral Gables, USA)  ASSOCIATED CONFERENCE PAPER: C7	2019 / 02 / 02
Constraints and Opportunities for Expressive Information Design Simon Fraser University School of Interactive Arts & Technology (Surrey, Canada)	2019 / 01 / 28
Visualizing Ranges over Time on Mobile Phones IEEE VIS 2018 (Berlin, Germany)  ASSOCIATED JOURNAL PAPER: J8	2018 / 10 / 24
Tools for Expressive Information Visualization Design Microsoft Vancouver Data Visualization Symposium (Vancouver, Canada)	2018 / 08 / 01
Timeline Storyteller, from Visualization Design Space to Deployment Data Empowerment Speaker Series (University of Calgary, Canada)	2018 / 06 / 18
Data-Driven Storytelling at Microsoft UBC School of Journalism Course on Special Topics in Contemporary Journalism: Data Viz (JRNL 520H) (Vancouver, Canada)	2017 / 10 / 24
Timelines Revisited: Considerations for Expressive Storytelling IEEE VIS 2017 (Phoenix, USA) ASSOCIATED JOURNAL PAPER: J6	2017 / 10 / 03
Expressive Storytelling With Timelines Uber Visualization Night: A Journey Through Space and Time (Seattle, USA)	2017 / 08 / 31
Timelines Revisited: Considerations for Expressive Storytelling King's College London Department of Informatics (London, UK)	2017 / 07 / 11
Timelines Revisited: Considerations for Expressive Storytelling City University London giCentre (London, UK)	2017 / 07 / 10
The Timeline Storyteller Custom Visual for Power BI Microsoft Data Insights Summit BI Power Hour (Seattle, USA) 	2017 / 06 / 13
Timelines Revisited: Considerations for Expressive Storytelling Northeastern University NUVIS Visualization Consortium (Boston, USA)	2017 / 04 / 28
Timelines Revisited: Considerations for Expressive Storytelling Bentley University RealViz talk series (Waltham, USA)	2017 / 04 / 27
What Story Does Your Timeline Tell? OpenVisConf 2017 (Boston, USA)	2017 / 04 / 24
Timelines Revisited: Considerations for Expressive Storytelling Radcliffe Institute at Harvard University (Cambridge, USA)	2016 / 12 / 08

TALKS (CONT.)

Why Visualization? Task Abstraction for Analysis and Design Dissertation Defence (Vancouver, Canada)	2016 / 03 / 23
Storytelling with Timeline Data Data-Driven Storytelling Dagstuhl Seminar (Wadern, Germany)	2016 / 02 / 11
Why Visualization? Task Abstraction for Analysis and Design Microsoft Research (Redmond, USA) 	2016 / 02 / 01
Matches, Mismatches, and Methods: Multiple-View Workflows for Energy Portfolio Analysis IEEE VIS 2015 (Chicago, USA) 	2015 / 10 / 28
ASSOCIATED JOURNAL PAPER: J5	
Multiple-View Workflows for Energy Portfolio Analysis University of Washington (Seattle, USA)	2015 / 09 / 04
The Future of Data and Design ... In Visualization Research Vancouver Data Visualization Meetup (Vancouver, Canada)	2015 / 05 / 19
Overview: The Design, Adoption, and Analysis of a Visual Document Mining Tool For Investigative Journalists IEEE VIS 2014 (Paris, France) 	2014 / 11 / 14
ASSOCIATED JOURNAL PAPER: J2	
Visualizing Dimensionally-Reduced Data: Interviews with Analysts and a Characterization of Task Sequences ACM BELIV 2014 (Paris, France)	2014 / 11 / 10
ASSOCIATED WORKSHOP PAPER: W3	
Pre-Design Empiricism for Information Visualization ACM BELIV 2014 (Paris, France)	2014 / 11 / 10
ASSOCIATED WORKSHOP PAPER: W2	
Visualization Task Abstraction from Multiple Perspectives IEEE VIS Doctoral Colloquium 2014 (Paris, France)	2014 / 11 / 08
A Multi-Level Typology of Abstract Visualization Tasks IEEE VIS 2013 (Atlanta, USA)	2013 / 10 / 15
ASSOCIATED JOURNAL PAPER: J1	
Investigating Interruptions in the Context of Computerized Cognitive Testing for Older Adults ACM CHI 2012 (Austin, USA)	2012 / 05 / 10
ASSOCIATED CONFERENCE PAPER: C4	
The Impact of Interruptions on Task Performance in Older Adults GRAND NCE AGM 2011 (Vancouver, Canada)	2011 / 05 / 14

DEMONSTRATIONS

Tilt and Pose-Based Gesture Interaction Microsoft TechFest 2019 (Redmond, USA)	2019 / 03 / 04 - 06
Timeline Storyteller The Computation + Journalism Symposium (Coral Gables, USA)	2019 / 02 / 01
Charticulator Tapestry Conference 2018 (Coral Gables, USA)	2018 / 12 / 01
Timeline Storyteller Microsoft Research Week (Redmond, USA)	2017 / 03 / 09
Timeline Storyteller Tapestry Conference 2017 (St. Augustine, USA)	2017 / 03 / 01

COMMUNITY SERVICE

ORGANIZING COMMITTEES

IEEE VIS (Co-Chair, VisInPractice)	2018, 2019
ACM CHI Workshop on Data Visualization on Mobile Devices (Co-Organizer)	2018
IEEE Pacific Visualization Symposium (Co-Chair, Visual Data Storytelling Contest)	2017, 2018

PROGRAM COMMITTEES

IEEE Conference on Information Visualization (InfoVis)	2017, 2018, 2019
Computation + Journalism (C+J)	2019
Information+	2018
VISAP: The IEEE VIS Arts Program	2018
BELIV: Evaluation and Beyond - Methodological Approaches for Visualization	2018
IEEE Pacific Visualization Symposium (PacificVis)	2017, 2018
ACM FAT*: Fairness, Accountability, Transparency (HCI / Visualization Track)	2018
The Art of Networks III	2018
EuroGraphics / VGTC Conf. on Visualization (EuroVis) State of the Art Reports	2017

EXTERNAL REVIEWING

IEEE Conference on Information Visualization (InfoVis)	2013 - 2016
ACM Conference on Human Factors in Computing Systems (CHI)	2013 - 2019
EuroGraphics / VGTC Conference on Visualization (EuroVis)	2014 - 2019
IEEE Pacific Visualization Symposium (PacificVis)	2017, 2019
IEEE Transactions on Visualization and Computer Graphics (TVCG)	2015 - 2018
SAGE Information Visualization Journal	2015 - 2016
IEEE Conference on Visual Analytics Science & Technology (VAST)	2015
ACM Transactions on Computer-Human Interaction (TOCHI)	2013
ACM SIGGRAPH Asia	2012

INVITED WORKSHOP, CONSORTIUM, + SEMINAR PARTICIPATION

BIRS Workshop on Restructuring IEEE VIS For the Future	2018
Harvard University / Sloan Foundation Timeline Consortium	2016, 2017, 2018
Schloss Dagstuhl Seminar on Data-Driven Storytelling	2016
ACM Beyond Time And Errors (BELIV) Workshop	2014
VACCINE / UCSD Workshop on the Evaluation of Visual Analytics	2014

STUDENT VOLUNTEERING

ACM Conference on Human Factors in Computing Systems (CHI)	2011, 2013, 2015, 2016
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ASSOCIATIONS

Data Visualization Society	2019 -
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UNIVERSITY SERVICE

UNIVERSITY OF BRITISH COLUMBIA DEPARTMENT OF COMPUTER SCIENCE

Graduate Admissions and Recruitment Committee	2013 - 2015
Guest Lecturer (CPSC 547: Information Visualization)	2014 - 2017
Curriculum Development (CPSC 444: Advanced HCI Methods)	2010 - 2011
Teaching Assistant (CPSC 444: Advanced Human Computer Interaction Methods)	2010
Teaching Assistant (CPSC 344: Introduction to Human Computer Interaction Methods)	2009

UNIVERSITY OF BRITISH COLUMBIA COMPUTER SCIENCE GRADUATE STUDENT ASSOCIATION

Vice President, Social Affairs	2010 - 2011
Co-Organizer, The Un-Distinguished Lecture Series	2010 - 2013

QUEENS UNIVERSITY COMPUTING STUDENT ASSOCIATION

Orientation Leader	2005
First-Year Representative	2004 - 2005

AWARDS

PROJECT RECOGNITION

IEEE InfoVis Conference: Best Paper Honorable Mention for J7 (Charticulator)	2018
Kantar Information is Beautiful Awards Shortlist (Charticulator)	2018

SERVICE RECOGNITION

University of British Columbia Dept. Computer Science Student Service Award	2016
University of British Columbia Dept. Computer Science Volunteering Award	2015

SCHOLARSHIPS

University of British Columbia Four Year Doctoral Fellowship	2011 - 2015
Natural Sciences & Engineering Research Council (NSERC) Postgraduate Scholarship	2011 - 2014
NSF IEEE VIS Doctoral Colloquium Travel Award	2014
Mitacs-Accelerate Research Internship Award	2013 - 2014
University of British Columbia Dept. Computer Science Merit Scholarship	2009 - 2011
Queen's University Dean's Entrance Scholarship in Computing	2004 - 2005