



Matthew Brehmer

p. 1 / 3

Data Visualization + User Experience Researcher

PhD Candidate, Expected Graduation Apr. 2016

Dept. Computer Science, University of British Columbia

cs.ubc.ca/~brehmer

brehmer[at]cs.ubc.ca

@mattbrehmer

About me

I am a data visualization and user experience researcher/designer. I enjoy exploring data, speaking to people with domain expertise, identifying appropriate ways to present data, and evaluating the impact of deployed visualizations.

Education

University of British Columbia

Doctor of Philosophy (Computer Science)

Supervisory committee: Tamara Munzner (chair), Joanna McGrenere, & Ron Rensink

Vancouver, Canada

2011 – 2016

(expected)

Master of Science (Computer Science, Sub-Specialization in Human Computer Interaction)

Supervised by Joanna McGrenere & Claudia Jacova

2009 – 2011

Queen's University

Bachelor of Computing (Honours) with Distinction

Specialization in Cognitive Science with Professional Internship

Kingston, Canada

2004 – 2009

Skills

Visualization & Interface Design

I use many approaches and tools for developing interactive visualization interfaces: from pen and paper and diagramming tools to coding interactive data sketches and custom visualization designs, with plenty of exploratory data analysis and data wrangling done along the way.

See examples at cs.ubc.ca/~brehmer and at bl.ocks.org/mattbrehmer.

Experiment Design & Analysis

As a result of my education in human-computer interaction and cognitive science, I am well-versed in the ethics, design, and analysis of experiments involving human subjects. I have designed experiments to investigate the capabilities of human perception and attention, and my findings have led to a number of implications for user interface design.

Qualitative User Research

My interest in visualization evaluation beyond quantitative estimates of completion time and error rate has led me to theoretical perspectives, methodologies, and methods typically associated with the social sciences and humanities. This course of study has helped me to attain a rich qualitative understanding of visualization use, adoption, and appropriation in the wild.

Project Domains

Journalism

As part of an ongoing collaboration between the UBC InfoVis Group and the Associated Press / Knight Foundation Overview Project, I conducted six case studies of journalists who used Overview to investigate and report on large text document collections. Our findings led to generalizable lessons for visualization design. I am also interested in providing journalists with better tools for producing presenting information to readers; and specifically tools for producing visual timelines.

Energy

Since 2013, I have been collaborating with a company that develops enterprise energy analysis and reporting software, designing visualizations for analyzing and monitoring large portfolios of buildings. I have consulted with various stakeholders and prospective users, envisioning ways to interactively locate patterns and anomalies in large hierarchical spatio-temporal datasets.

Health & Fitness

My M.Sc research pertained to the design and evaluation of C-TOC, a computerized cognitive assessment tool intended for early detection of dementia. I studied the use of C-TOC prototypes by healthy older adults and by adults with diagnosed mild cognitive impairments.

Prior to my M.Sc, I worked in the area of exercise video games (aka active games): I studied the role of physical exertion on cognitive task performance. I also designed GAIM, an XNA/C# toolkit which allowed players with different input peripherals to play active games together.



Matthew Brehmer

p. 2 / 3

Data Visualization + User Experience Researcher

PhD Candidate, Expected Graduation Apr. 2016

Dept. Computer Science, University of British Columbia

cs.ubc.ca/~brehmer

brehmer[at]cs.ubc.ca

@mattbrehmer

Work Experience

Microsoft Research

Research Intern

I conducted research related to information visualization and human-computer interaction, working with the neXus research team and advised by Bongshin Lee.

Redmond, USA

Summer 2015

EnerNOC (formerly Pulse Energy)

Mitacs-Accelerate Graduate Research Intern

I designed visualization prototypes for commercial energy analysis and management software. I consulted with prospective users and other stakeholders, envisioning ways to interactively locate patterns and anomalies in large hierarchical spatio-temporal datasets.

Vancouver, Canada

2013 – 2014

University of British Columbia Department of Computer Science

Research Assistant

I designed and conducted human-computer interaction experiments, collected qualitative data regarding software usability and utility from interview and field studies, performed data analysis in tools such as R and SPSS, and wrote research papers.

Vancouver, Canada

2009 – 2016

Engineering Interactive Systems at Queen's University (EQUIS)

Research Assistant

I designed and conducted an experiment to investigate the role of physical exertion on cognitive task performance. I also designed GAIM, an XNA/C# toolkit which allowed players with different input peripherals to play active games together.

Kingston, Canada

2008 – 2009

EMC Corporation

User Experience Design Intern

I designed the user interface for enterprise rich media content management software, intended for use by the design and marketing departments at a large automotive company. I consulted with stakeholders, developed mockups, and wrote UI code.

Toronto, Canada

2007 – 2008

Killam Properties, Inc.

Web Developer, IT Support Staff

I maintained the website for a Canadian residential property management company.

Halifax, Canada

Summer 2006

Teaching

University of British Columbia Department of Computer Science

Teaching Assistant

I planned and conducted tutorials for up to three dozen senior undergraduate students in a course in advanced human-computer interaction methods, and in an introductory course in human computer interaction.

Vancouver, Canada

2009 – 2010

Volunteering

External Reviewer: IEEE InfoVis, EuroVis, ACM TOCHI, ACM CHI, ACM SIGGRAPH Asia

2013 – 2016

Student Volunteer: ACM CHI Conference

2011, 2013, 2015

University of British Columbia Department of Computer Science

Graduate Admissions and Recruitment Committee

Vancouver, Canada

2013 – 2015

University of British Columbia Computer Science Graduate Students' Association

Vice President (Social Events)

Graduate Student Orientation Committee

Un-Distinguished Lecture Series Organizer

Vancouver, Canada

2010 – 2011

2012

2010 – 2011, 2012 – 2013

Awards & Honours

Invited participant to the 2014 IEEE VIS Doctoral Colloquium, Mitacs-Accelerate Graduate Research Internship Program Award, UBC CS Volunteering Award, NSERC Postgraduate Scholarship, UBC Four Year Doctoral Fellowship, UBC CS Merit Scholarship, Queen's Entrance Scholarship



Matthew Brehmer

p. 3 / 3

Data Visualization + User Experience Researcher

PhD Candidate, Expected Graduation Apr. 2016

Dept. Computer Science, University of British Columbia

matthewbrehmer.net

mattbrehmer[at]gmail

@mattbrehmer

Research Publications

* papers accepted

Matches, Mismatches, and Methods: Multiple-View Workflows for Energy Portfolio Analysis.

2015

Brehmer, Ng, Tate, & Munzner. In *IEEE Trans. Visualization and Computer Graphics / Proc. InfoVis*, 22(1). p. 449-458.

39 / 178*
(22%)

TimeLineCurator: Interactive Authoring of Visual Timelines from Unstructured Text.

2015

Fulda, **Brehmer**, & Munzner. *IEEE Trans. Visualization and Computer Graphics / Proc. Visual Analytics Science & Technology (VAST)*, 22(1). p.300-309.

31 / 149*
(21%)

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

2014

Brehmer, Ingram, Stray, & Munzner. *IEEE Trans. Visualization and Computer Graphics / Proc. InfoVis*, 20(12). p. 2271-2280.

45 / 196*
(23%)

Visualizing Dimensionally-Reduced Data: Interviews with Analysts and a Characterization of Task Sequences.

2014

Brehmer, Sedlmair, Ingram, & Munzner. *Proc. ACM Workshop on BEyond time and errors: novel evalUation methods for Information Visualization (BELIV)*. p1-8.

23 / 30*
(77%)

Pre-Design Empiricism for Information Visualization: Scenarios, Methods, and Challenges.

2014

Brehmer, Carpendale, Lee, & Tory. *Proc. ACM Workshop on BEyond time and errors: novel evalUation methods for Information Visualization (BELIV)*. p.147-151.

23 / 30*
(77%)

C-TOC (Cognitive Testing on Computer): Investigating the Usability and Validity of a Novel Self-administered Cognitive Assessment Tool in Aging and Early Dementia.

2014

Jacova, McGrenere, Lee, Wang, Le Huray, Corenblith, **Brehmer**, Tang, Hayden, Beattie, & Hsiung. *Alzheimer and Related Disorders*.

23 / 30*

A Multi-Level Typology of Abstract Visualization Tasks.

2013

Brehmer & Munzner. *IEEE Trans. Visualization and Computer Graphics / Proc. InfoVis*, 19(12), p. 2376-2385.

38 / 152*
(25%)

Investigating Interruptions in the Context of Computerised Cognitive Testing for Older Adults.

2012

Brehmer, McGrenere, Tang, & Jacova. *Proc. ACM Conf. Human Factors in Computing Systems (CHI)*, p.2649-2658.

370 / 1577*
(23%)

Dimensionality Reduction in the Wild: Gaps and Guidance.

2012

Sedlmair, **Brehmer**, Ingram, & Munzner. *UBC Department of Computer Science Technical Report TR-2012-03*.

The Haptic Crayola Effect: Exploring the Role of Naming in Learning Haptic Stimuli.

2011

Hwang, Maclean, **Brehmer**, Hendy, Sotirakopoulos, & Choi. *Proc. IEEE World Haptics Conference (WHC)*, p. 385-390.

Activate Your GAIM: A Toolkit for Input in Active Games.

2010

Brehmer, Graham, & Stach. *Proc. ACM Academic Conference on the Future of Game Design and Technology (Future Play)*, p. 151-158.

Classifying Input for Active Games.

2009

Stach, Graham, **Brehmer**, & Hollatz. *Proc. ACM Advances in Computer Entertainment (ACE)*, p. 379-382.

Programming

R, JavaScript (D3.js), HTML, CSS, ActionScript / Flex, Processing, Java, C#, C, Matlab

Software Tools

OmniGraffle, Visio, Photoshop, SPSS, Tableau Desktop, Weka, Fusion Tables, ScraperWiki, InqScribe, Dedoose, Git, SVN, LaTeX, iWork, Office, GarageBand, Logic Pro