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Education: **Ph.D. 2010**
Computer Science, University of Calgary
Supervisor: Dr. Sheelagh Carpendale
Thesis Title: 3D Interaction on Tabletop Displays

M.Sc. 2004
Computer Science, University of British Columbia
Supervisor: Dr. Kellogg S. Booth
Thesis Title: Improving Menu Placement Strategies for Pen Input

B.Sc. 2002
Computing Science and Mathematics, Simon Fraser University
Combined Honours

Research Interests: Human-computer interaction, collaboration, computer-supported cooperative work, tabletop displays, large-screen displays, 3D interaction, direct vs. indirect pen-input.

EMPLOYMENT

ASSISTANT PROFESSOR University of Waterloo	Sep 2010 - Present
RESEARCH INTERN Intel Corporation Supervisor: John David Miller Focus: 3D distributed collaboration	Jul - Aug 2005
RESEARCH INTERN Mitsubishi Electric Research Laboratories Supervisor: Dr. Chia Shen Focus: Tabletop display interaction	Jun - Aug 2004
RESEARCH ASSISTANT Queen's University Supervisor: Dr. Roel Vertegaal Focus: 3D realistic human facial animation	May - Aug 2002
RESEARCH ASSISTANT Simon Fraser University Supervisor: Dr. Kori Inkpen Focus: Tabletop collaboration	May 2001 - Apr 2002
SYSTEMS ANALYST Simon Fraser University	Sep 2000 - Apr 2002
PROGRAMMER Legasys Corporation	Jun - Aug 1999 and 2000

TEACHING

INSTRUCTOR/PROFESSOR University of Waterloo MSCI 343: Human-Computer Interaction MSCI 646: Database Management Systems	Fall 2010 Spring 2011
University of Calgary CPSC 219: Introduction to Computer Science for Multidisciplinary Studies II	Winter 2009
TEACHING ASSISTANT University of Calgary CPSC 481: Human-Computer Interaction I	Fall 2004
University of British Columbia CPSC 152: Principles of software development CPSC 252: Program design & data structures CPSC 111/121 (Learning Centre): Introduction to/Models of Computation	Winter 2003 Fall 2003 Winter 2004

PUBLICATIONS

Full Conference Papers (Peer Reviewed)

Luc Vlaming, Christopher Collins, **Mark Hancock**, Miguel Nacenta, Tobias Isenberg, and Sheelagh Carpendale. Integrating 2D mouse emulation with 3D manipulation for visualizations on a multi-touch table. In *Proceedings of Interactive Tabletops and Surfaces (ITS 2010)*. ACM Press, New York, NY, 221-230, 2010.

Mark Hancock, Thomas ten Cate, Tobias Isenberg, and Sheelagh Carpendale. Supporting sandtray therapy on an interactive tabletop. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems (CHI 2010)*. ACM Press, New York, NY, 2133-2142, 2010.

Mark Hancock, Otmar Hilliges, Christopher Collins, Dominikus Baur, and Sheelagh Carpendale. Exploring tangible and direct touch interfaces for manipulating 2D and 3D information on a digital table. In *Proceedings of Interactive Tabletops and Surfaces (ITS 2009)*. ACM Press, New York, NY, 85-92, 2009.

Mark Hancock, Thomas ten Cate, and Sheelagh Carpendale. Sticky tools: Full 6DOF force-based interaction for multi-touch tables. In *Proceedings of Interactive Tabletops and Surfaces (ITS 2009)*. ACM Press, New York, NY, 145-152, 2009.

Mark Hancock, Miguel Nacenta, Carl Gutwin, and Sheelagh Carpendale. The effects of changing projection geometry on the interpretation of 3D orientation on tabletops. In *Proceedings of Interactive Tabletops and Surfaces (ITS 2009)*. ACM Press, New York, NY, 175-182, 2009.

Mark Hancock, Sheelagh Carpendale, and Andy Cockburn. Shallow-depth 3D interaction: Design and evaluation of one-, two- and three-touch techniques. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems (CHI 2007)*. ACM Press, New York, NY, 1147-1156, 2007.

Mark S. Hancock, John David Miller, Saul Greenberg, and Sheelagh Carpendale. Exploring visual feedback of change conflict in a distributed 3D environment. In *Proceedings of the Working Conference on Advanced Visual Interfaces (AVI 2006)*. ACM Press, New York, NY, 209-216, 2006.

Mark S. Hancock, Chia Shen, Clifton Forlines, and Kathy Ryall. Exploring non-speech auditory feedback at an interactive multi-user tabletop. In *Proceedings of Graphics Interface (GI 2005)*. ACM International Conference Proceeding Series, vol. 112. Canadian Human-Computer Communications Society, School of Computer Science, University of Waterloo, Waterloo, Ontario, 41-50, 2005.

Mark S. Hancock and Kellogg S. Booth. Improving menu placement strategies for pen input. In *Proceedings of Graphics Interface (GI 2004)*. ACM International Conference Proceeding Series, vol. 62. Canadian Human-Computer Communications Society, School of Computer Science, University of Waterloo, Waterloo, Ontario, 221-230, 2004.

Journal Articles (Peer Reviewed)

Chia Shen, Kathy Ryall, Clifton Forlines, Alan Esenther and Frederic D. Vernier, Katherine Everitt, Mike Wu, Daniel Wigdor, Meredith Ringel Morris, **Mark Hancock**, and Edward Tse. Informing the design of direct-touch tabletops. *IEEE Computer Graphics and Applications*, 26(5):36-46, Sep-Oct, 2006.

Other Conference Contributions (Peer Reviewed)

Petra Isenberg, Uta Hinrichs, **Mark Hancock**, Matthew Tobiasz, and Sheelagh Carpendale. Information visualization on interactive tabletops in work vs. public settings. In *Proceedings of the Workshop on Collaborative Visualization on Interactive Surfaces (CoVIS 2009)*. Appeared in the Technical Reports series of the Department of Media Informatics of the Ludwig-Maximilians-University of Munich, Germany in 2010.

Mark Hancock and Sheelagh Carpendale. Supporting multiple off-axis viewpoints at a tabletop display. In *Proceedings of the Second Annual IEEE International Workshop on Horizontal Interactive Human-Computer Systems (Tabletop 2007)*. IEEE Computer Society, Los Alamitos, CA, 171-178, 2007.

Uta Hinrichs, **Mark Hancock**, Christopher Collins, and Sheelagh Carpendale. Examination of text-entry methods for tabletop displays. In *Proceedings of the Second Annual IEEE International Workshop on Horizontal Interactive Human-Computer Systems (Tabletop 2007)*. IEEE Computer Society, Los Alamitos, CA, 105-112, 2007.

Jeroen Keijser, Sheelagh Carpendale, **Mark Hancock**, and Tobias Isenberg. Exploring 3D interaction in alternate control-display space mappings. In *Proceedings of the IEEE Symposium on 3D User Interfaces (3DUI 2007)*. IEEE Computer Society, Los Alamitos, CA, 17-24, 2007.

Edward Tse, **Mark Hancock**, and Saul Greenberg. Speech filtered bubble cursor: Improving target acquisition on display walls. In *Proceedings of the 9th international Conference on Multimodal interfaces*. ACM Press, New York, NY, 307-314, 2007.

Mark S. Hancock, Frédéric Vernier, Daniel Wigdor, Sheelagh Carpendale, and Chia Shen. Rotation and translation mechanisms for tabletop interaction. In *Proceedings of the First IEEE International Workshop on Horizontal Interactive Human-Computer Systems (Tabletop 2006)*. IEEE Computer Society, Los Alamitos, CA, 79-86, 2006.

Torre Zuk, Lothar Schlesier, Petra Neumann, and **Mark S. Hancock** and Sheelagh Carpendale. Heuristics for information visualization evaluation. In *Proceedings of the 2006 AVI Workshop on Beyond Time and Errors: Novel Evaluation Methods For information Visualization (BELIV 2006)*. ACM Press, New York, NY, 55-60, 2006.

Chia Shen, **Mark S. Hancock**, Clifton Forlines, and Frédéric D. Vernier. Cor²ds: Context-rooted rotatable draggables. In *CHI '05 Extended Abstracts on Human Factors in Computing Systems (CHI 2005)*. ACM Press, New York, NY, 1781-1784, 2005.

Mark S. Hancock, Rhian Davies, and Joanna McGrenere. Focus on women in computer science. In *Western Canadian Conference on Computing Education*, 2004.

Book Contributions

Petra Isenberg, Uta Hinrichs, **Mark Hancock**, and Sheelagh Carpendale. Chapter 15: Digital tables for collaborative information exploration. In Christian Mueller-Tomfelde (Ed.), *Tabletops – Horizontal Interactive Displays*. Springer. Mar, 2010.

Rhian Davies, **Mark Hancock**, and Anne Condon. Perspectives: Canadian women in computer science. In *Encyclopedia of Computer Science and Engineering*. Wiley InterScience. Jan, 2009.

Workshop Participation

Evaluating Co-located Collaborative Technologies. ACM CSCW'04 Conference on Computer Supported Co-operative Work, Conference Companion, Chicago, IL. November 6-10, 2004.

Technical Reports

Jens Grubert, **Mark Hancock**, Sheelagh Carpendale, Edward Tse and Tobias Isenberg. Interacting with Stroke-Based Rendering on a Wall Display. Technical Report TR-2007-882-34, University of Calgary, Calgary, AB, 2007.

Mark S. Hancock and Sheelagh Carpendale. The complexities of computer-supported collaboration. Technical Report TR-2006-812-05, University of Calgary, Calgary, AB, 2006.

Tara Whalen, Vicki Ha, Kori M. Inkpen, Regan L. Mandryk and Stacey D. Scott, and **Mark S. Hancock**. Direct intentions: The effects of input devices on collaboration around a tabletop display. Technical Report, Dalhousie University, Halifax, NS, 2004.

Mark S. Hancock. A bayesian network model of a collaborative interactive tabletop display. Technical Report TR-2003-18, University of British Columbia, Vancouver, BC, 2003.

Patents

Sheelagh Carpendale, **Mark Hancock**, Thomas ten Cate, and Tobias Isenberg. Three-dimensional widget manipulation on a multi-touch panel. International Application No.: PCT/CA2009/001734, (Submitted), Initial Publication Date: Jan 13, 2011.

Frederic D. Vernier, Chia Shen, **Mark S. Hancock**, Clifton L. Forlines. Method and system for manipulating graphical objects displayed on a touch-sensitive display surface using displaced pop-ups. U.S. Application No.: 11/057,744, (Submitted; Company has not pursued due to switched research direction), 2006

Theses

Mark Hancock. 3D Tabletop Display Interaction. PhD thesis, University of Calgary, Calgary, AB, 2010.

Mark Hancock. Improving Menu Placement Strategies for Pen Input. Master's thesis, The University of British Columbia, Vancouver, BC, 2004.

Talks & Demos

Binary Search (Invited 1st Grade Lecture). Captain John Palliser School, Calgary, Canada, February 2011. Invited by Yoonhee Jiang.

3D Tabletop Display Interaction (Invited Talk). Inria, Paris, France, November 2010. Invited by Petra Isenberg.

3D Interaction on a Tabletop Display (Invited Demo). SMART Technologies, January 2009. Invited by Michael Boyle.

Shallow-Depth 3D Interaction (Invited Talk). SMART Technologies, June 2007. Invited by Shannon Bjarnason.

Exploring Non-Speech Auditory Feedback at an Interactive Multi-User Tabletop (Talk). University of Calgary, September 2004.

Exploring Non-Speech Auditory Feedback at an Interactive Multi-User Tabletop (Invited Talk). Mitsubishi Electric Research Labs, August 2004. Invited by Chia Shen.

SUPERVISING AND MENTORING

University of Waterloo

PhD Student (Co-Supervisor), Yu-Ling Betty Chang	Jan 2011-Present
MSc Student, Joseph Shum	Jan 2011-Present
Research Assistant, Adam Bradley	Nov 2010-Present
Undergraduate Co-op Student, Deon Jajalla	Sep 2010-Apr 2011

University of Calgary

Undergraduate Intern (Unofficial Co-Supervisor), Kimberly Mikulecky	Apr 2010-Present
Undergraduate Intern (Unofficial Co-Supervisor), Stephanie Mikulecky	Apr 2010-Present
MSc Student (Unofficial Co-Supervisor), Luc Vlaming	Sep 2009-Sep 2010
MSc Mentor (Unofficial Co-Supervisor), Thomas ten Cate	Sep 2008-Apr 2009
Internship Mentor, Jens Grubert	May-August 2007

AWARDS AND GRANTS

Awards of Distinction

Nomination for Best Paper Award: ACM SIGCHI 2007	2007
Alberta Ingenuity Studentship	2005-2010
NSERC Postgraduate Scholarship D	2005-2007
University of Calgary Dean's Entry Scholarship	2004
NSERC Postgraduate Scholarship A	2002-2004
Advanced Systems Institute Scholarship	2002
Computing Research Association Outstanding Undergraduate Honourable Mention	2002
NSERC Undergraduate Summer Research Award	2001
Simon Fraser Open Scholarship	1998-2001
Kenneth-Strandt National Entrance Scholarship	1997

Current Individual Grants

NSERC Discovery Grant	2011-2015
Ubiquitous Virtual Tools: Providing Ad-Hoc Multitouch Interaction on Nearby Surfaces	
\$100,000 (\$20,000/year)	

Current Shared Grants

NCE: GRAND: Graphics, Animation & New Media	2010-2014
Kellogg S. Booth PI + 49 others	
Role: Network Investigator	
\$23,000,000 over 5 years (0.3%); \$15,000 allocated/year	
NSERC: Digital Surface Software Application Network (SURFNET)	2010-2015
Frank Maurer PI + 12 others	
Role: Research Collaborator	
Funding allocated on project-by-project basis	

PROFESSIONAL ACTIVITIES

Teaching Certification

University Teaching Certificate, University of Calgary	2008
Instructional Skills Workshop, University of Calgary	2007

Conference Committees

Program Committee, ACM Interactive Tabletops and Surfaces	2010, 2011
Minute Madness Chair, ACM Interactive Tabletops and Surfaces	2010
Work-in-Progress Committee, ACM SIGCHI 2009	2009
Program Committee, ACM Interactive Tabletops and Surfaces	2009
Posters Co-Chair, ACM Interactive Tabletops and Surfaces	2009
Program Committee, IEEE Tabletops and Interactive Surfaces	2008
Posters & Demos Co-Chair, IEEE Tabletops and Interactive Surfaces	2008
Student Volunteer Chair, IEEE Tabletops and Interactive Surfaces	2007

University Committees

Dean's Advisory Committee on Appointments, University of Waterloo	July 2011-Present
Recruiting Committee, University of Waterloo	Jan 2011-Present
Engineering Faculty Committee, University of Waterloo	Jan 2011-Present
Department Undergraduate Studies Committee, University of Waterloo	Sep 2010-Present
Computer Science Graduate Society President, University of Calgary	2005-2006
Focus on Women in Computer Science Committee, University of British Columbia	2003-2004

Reviewing

ACM SIGCHI Conference on Human Factors in Computing Systems	2006, 2008, 2009, 2010, 2011
ACM Symposium on User Interface Software and Technology	2008, 2009, 2010, 2011
Graphics Interface	2005, 2006, 2011
Interact	2011
Eurographics	2011
Tangible and Embedded Interaction	2009, 2011
IEEE Tabletops and Interactive Surfaces	2006, 2007, 2008
Interacting with Computers	2007
International Conference on Pervasive Computing	2007
IEEE Computer Graphics & Applications	2006
Computer Graphics International	2004
ACM Conference on Computer Supported Cooperative Work	2004