Edward H. Tse

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OBJECTIVE

My vision is to change the way the world interacts with computers. I am seeking an industry opportunity create novel interaction techniques and apply them in practice.

ACADEMIC HISTORY

2007 **Doctor of Philosophy, University of Calgary**
Research Area: Computer Supported Cooperative Work
Thesis Title: Multimodal Co-located Interaction

2004 **Master of Science, University of Calgary**
Research Area: Human Computer Interaction
Thesis Title: The Single Display Groupware Toolkit

2002 **Bachelor of Science with Distinction, University of Calgary**
Faculty: Computer Science

1998 **Bilingual Diploma, Central Memorial High School**
Completed Advanced Placement courses in French and English

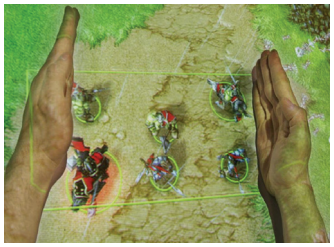
INDUSTRY EXPERIENCE

2006 **Mitsubishi Electric Research Laboratories, Research Internship**

Worked with industrial designers to develop a custom multi user multimodal system to support their creative brainstorming practices. Marketed multimodal interactions through demonstrations and presentations at numerous public venues including Wired NextFest, Siggraph, UIST, CSCW, and CHI.

Supervisor: Chia Shen

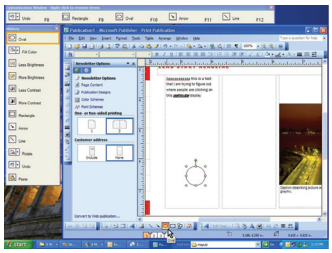
2005 **Mitsubishi Electric Research Laboratories, Research Internship**



Invented speech and gesture interactions on a multi-user digital table leveraging existing off the shelf applications. Marketed this invention through demonstrations to the US Department of Defence, NYPD, and Game Developers Conference resulting in significant media interest and MERL Diamond Touch sales.

Supervisor: Chia Shen

2004 **SMART Technologies, Research Internship**



Explored lightweight customizable interfaces for repeated actions on large digital wall displays. Implemented a history side bar of previous commands used in existing commercial applications to rapidly reveal and recall recently activated functionality.

Supervisor: Doug Hill

2003 **SMART Technologies, Research Internship**

Advocated for multi-touch input by developing a toolkit for rapidly prototyping multi-touch applications on the Digital Vision Technology (DViT) Smart Board. Project was well received and integrated into future versions of the Smart Board Software Development Kit.

Supervisor: Doug Hill

2002 **NSERC Undergraduate Research Assistant**

Worked on a distributed multimedia toolkit enabling end programmers to rapidly prototype video media spaces. Created a Single Display Groupware Toolkit to support multiple mice and keyboards on a shared display. This toolkit was the software foundation for numerous HCI classes and theses.

Supervisor: Saul Greenberg

2001 – 2007 **University of Calgary, Teaching Assistant**

CPSC 231 – Introduction to Programming
SENG 311 – Software Engineering
CPSC 455 – The Software / Hardware Interface
CPSC 481 – Human Computer Interaction
CPSC 523 – Advanced Topics in Hardware
CPSC 581 – Design Studio in Human Computer Interaction

2001 **Magic Realism, President and CEO**

Managed software development to market residential homes on the Internet. Created 360° views of home interiors at a very reasonable cost. Developed a partnership with RE/MAX agents in Calgary, Canada.

2000 **Due West Student Painting, Manager**
Managed marketing, finance, client negotiations, payroll, and supervised ten to fifteen painters working over distant painting sites. Resolved conflicts, negotiated contracts, managed equipment and materials, supervised and motivated both student and adult painters.

1995 **Advanet Technologies, Technician**
Technician: Software and Hardware troubleshooting, built custom systems, learned essential electrical engineering skills and developed a passion for working with hardware.

MEDIA RESPONSE TO MY WORK

"Forget 24-inch monitors, get yourself a big table. This, quite literally, is brief glimpse into the future"

Sbarski, P., (2006) Forget 24-inch monitors, get yourself a big table, The Inquirer (June 14, 2006), http://www.theinquirer.net/?article=32422.

"…this new DiamondTouch touch panel table interface has one thing NYU's unit lacked: game… Mitsubishi's system also includes voice control, and they show it all off with a fairly impressive demo of Warcraft III"

Miller, P. (2006) Mitsubishi R&D rocks Warcraft III with new DiamondTouch table, Engadget (Mar 27, 2006), http://www.engadget.com/2006/03/27/mitsubishi-randd-rocks-warcraft-iii-with-new-diamondtouch-table.

"Mitsubishi Electric Research Laboratories gave us these videos of Google Earth in use. Word is the military got some demos and is pretty interested in the technology. It's pretty easy to figure out why if you watch the vids."

Block, G. (2006) Google Earth on the DiamondTouch, International Gaming News (Mar 24, 2006), http://gear.ign.com/articles/698/698449p1.html.

"It changes everything and nothing: it's the same game, just far more controllable and intuitive."

Pearson, C. (2006) Digital Input, Wanted: Touchscreen Gaming, PC Gamer (June, 2006), Issue 162, page 15.

"The player, pretending to be a commander, can control movement by tapping the display and shouting commands"

Kageyama, Y. (2006) Japanese Touch Panel Table. Associated Press, Yahoo News and CNN (June 1, 2006), http://news.yahoo.com/s/ap/20060601/ap_on_hi_te/japan_touch_panel_table_1

"Expect a Google job offer to be coming, Edward. Expect that tabletop display to be showing up in the Googleplex, which has been woefully lacking in cool stuff for visitors lately."

Sullivan, D. (2006) Minority Report-Like Interactive Google Earth, SearchEngineWatch.com (June 14, 2006), http://blog.searchenginewatch.com/blog/060614-065502.

JOURNAL ARTICLES

2007 **Multimodal Multiplayer Tabletop Gaming**. **Tse, E.**, Greenberg, S., Shen, C. and Forlines, C. In ACM CIE Computers in Entertainment. June. ACM Press (this is a reprint rewarded to the best papers at Pervasive Games).

PEER REVIEWED FULL PAPERS

2008 **Exploring True Multi-User Multimodal Interaction over a Digital Table**. **Tse, E.**, Greenberg, S., Shen, C., Forlines, C., and Kodama, R. *Proceedings of DIS 2008* (Feb 25-27, Cape Town, Africa), In Press.

2007 **Speech-Filtered Bubble Ray: Improving Target Acquisition on Display Walls**. **Tse, E.**, Hancock, M. and Greenberg, S. *Proceedings of Ninth International Conference on Multimodal Interfaces (ICMI 2007)*, (Nov 12-15, Nagoya, Japan), In Press.

2007 **Multimodal Split View Tabletop Interaction Over Existing Applications**. **Tse, E.**, Greenberg, S., Shen, C., Barnwell, J., Shipman, S. and Leigh, D. *Proceedings of IEEE Tabletop 2007* (Oct 10-12, Newport, RI), In Press.

2007 **How Pairs Interact Over a Multimodal Digital Table**. **Tse, E.,** Shen, C., Greenberg, S. and Forlines, C. *Proceedings of ACM CHI Conference on Human Factors in Computing Systems* (May 1-3, San Jose, CA), ACM Press, 215-218.

2006 **GSI DEMO: Multi User Gesture / Speech Interaction over Digital Tables by Wrapping Single User Applications**. **Tse, E.,** Greenberg, S. and Shen, C. *Proceedings of Eighth International Conference on Multimodal Interfaces (ICMI'06)*, (Nov 2-4, Banff, Canada), ACM Press, 76-83.

2006 **Enabling Interaction with Single User Applications through Speech and Gestures on a Multi-User Tabletop**. **Tse, E.,** Shen, C., Greenberg, S. and Forlines, C. *Proceedings of Advanced Visual Interfaces (AVI'06)*, May 23-26, Venezia, Italy, ACM Press. Acceptance Rate <25%.

2006 **Multimodal Multiplayer Tabletop Gaming**. **Tse, E.,** Greenberg, S., Shen, C. and Forlines, C. *Proceedings Third International Workshop on Pervasive Gaming Applications (PerGames'06)*, in conjunction with 4th International Conference on Pervasive Computing, May 7th Dublin, Ireland.

Received the Best Paper Award at Pervasive Games 2006

2004 **Rapidly Prototyping Single Display Groupware through the SDG Toolkit**. **Tse, E.** and Greenberg, S. *Proceedings of Fifth Australasian User Interface Conference*, 28, Australian Computer Society Inc., 101-110.

2004 **Avoiding Interference: How People Use Spatial Separation and Partitioning in SDG Workspaces**. **Tse, E.**, Histon, J., Scott, S. and Greenberg, S. *Proceedings of the ACM Conference on Computer Supported Cooperative Work (CSCW '04)*, (Nov 6-10, Chicago, Illinois), ACM Press, 215-218.

PEER REVIEWED POSTERS, DEMONSTRATIONS

2006 **Multi User Multimodal Tabletop Interaction over Existing Single User Applications**. **Tse, E.**, Greenberg, S., Shen, C. Demonstration, *Adjunct Proceedings of ACM CSCW 2006.*

2006 **Exploring Interaction with Multi User Speech and Whole Handed Gestures on a Digital Table**. Tse, E., Greenberg, S., Shen, C. Demonstration, *Adjunct Proceedings of ACM UIST 2006.*

2006 **Multimodal Co-located Collaboration**. **Tse, E.** Doctorial Consortium, *Adjunct Proceedings of ACM UIST 2006.*

2003 **Programming for Multiple Touches and Multiple Users: A Toolkit for the Diamond Touch Hardware**. Diaz-Marino, R., Tse, E, and Greenberg, S. *Adjunct Proceedings of ACM UIST 2003*.

2002 **SDG Toolkit: A Toolkit for Rapidly Prototyping Single Display Groupware**. Tse, E., and Greenberg, S. *Extended Abstracts of ACM CSCW 2002*.

PEER REVIEWED VIDEOS

2006 **Motivating Multimodal Interaction Around Digital Tabletops**. **Tse, E.**, Greenberg, S. and Shen, C. *Video Proceedings of ACM CSCW'06 Conference on Computer Supported Cooperative Work*, ACM Press.

2006 **SDG Toolkit in Action**. Greenberg, S. and **Tse. E.** *Video Proceedings of ACM CSCW'06 Conference on Computer Supported Cooperative Work*, ACM Press.

2004 **SDG Toolkit**. **Tse, E.** and Greenberg. S. Video Proceedings of the ACM CSCW Conference on Computer Supported Cooperative Work, ACM Press.

2004 **The GroupLab Diamond Touch™ Toolkit**. Diaz-Marino, R., **Tse, E.** and Greenberg. S. *Video Proceedings of the ACM CSCW Conference on Computer Supported Cooperative Work*, ACM Press.

TECHNICAL REPORTS

2005 **Employing Usability, Efficiency and Evolvability in the CEXI Toolkit**. **Tse, E.** *Technical Report 2005-783-14, Department of Computer Science, University of Calgary*, Alberta, Canada T2N 1N4. May.

2005 **Using Aspects to Convert Single User Applications into Multiple User Applications**. **Tse, E.** *Technical Report 2005-785-16, Department of Computer Science, University of Calgary*, Alberta, Canada T2N 1N4. May.

2005 **Supporting Lightweight Customization for Meeting Environments**. **Tse, E.** and Greenberg, S. *Technical Report 2005-784-15, Department of Computer Science, University of Calgary*, Alberta Canada T2N 1N4. May.

THESES

2007 **Multimodal Co-located Interaction**. **Tse, E.** PhD Dissertation, *Department of Computer Science, University of Calgary*, Alberta, Canada, October.

2004 **The Single Display Groupware Toolkit**. **Tse, E.** MSc Thesis, *Department of Computer Science, University of Calgary*, Alberta, Canada, November.

ACADEMIC PRESENTATIONS

2007 **How Pairs use a Multimodal Digital Table**. San Jose, U.S.A. CHI Conference Short Paper

2006 **Multi User Multimodal Interaction over Existing Single User Applications.** Banff, Canada. CSCW Demonstration

GSI Demo: Multi User Gesture/Speech Interaction by Demonstration. Banff, Canada. ICMI Conference Paper.

Exploring Interaction with Multi User Speech and Whole Handed Gestures on a Digital Table. Montreux, Switzerland. UIST Demonstration.

Natural Interaction on a Digital Table. Calgary, Canada. Media Masters with Jay Ingram.

Enabling Interaction with Single User Applications through Speech and Gestures on a Multi-User Tabletop. Venice, Italy. AVI Conference Paper.

Multimodal Multiplayer Tabletop Gaming. Dublin, Ireland. Pervasive Games Paper.

Multimodal Tabletop Interaction. Demonstrations, City of Calgary Disaster Services, CBC News, Wired Nextfest, Siggraph 2006.

2005 **Puppetry in 3D Animations**. Toronto, Canada. DGP Lab, University of Toronto.

The CEXI Toolkit. Halifax, Canada. EDGE Lab, Dalhousie University.

Puppetry in 3D Animation. Cambridge, USA. Massachusetts Institute of Technology.

Multimodal Tabletop Interaction. Demonstrations, New York Police Department Real Time Crime Center, U.S. Department of Defense, GeoINT, Google, and Blizzard Entertainment.

2004 **Avoiding Interference: How People Use Spatial Separation and Partitioning in SDG Workspaces**. Chicago, USA. CSCW Conference.

Rapidly Prototyping Single Display Groupware through the SDG Toolkit. Dunedin, New Zealand. AUIC Conference

Lightweight Customizable Interfaces for Large Displays. Calgary, Canada. Smart Technologies.

2003 **The Digital Vision Technology (DViT) Toolkit**. Calgary, Canada. Smart Technologies.

Programming for Multiple Touches and Multiple Users: A Toolkit for the Diamond Touch Hardware. Vancouver, Canada. UIST Demo

2002 **SDG Toolkit: A Toolkit for Rapidly Prototyping Single Display Groupware**. New Orleans, USA. CSCW Poster.

SERVICE

2005 – 2007 **Graduate Representative**, Graduate Students Association, University of Calgary

Graduate Student Representative on the Internal Standing Committee. Brought forth policies to improve external communications and graduate club support.

2006 – 2007 **Trustee**, Sharon Lutheran Church, Calgary

Responsible for the maintenance of church and purchase of new equipment. Managed the purchase of a new grand piano and installation of a new stereo system.

2004 – 2005 **Vice President External**, Computer Science Graduate Society, University of Calgary

Responsible for representing the interests of Computer Science graduate students to the Graduate Representative Council. Developing a proposal to improve support for graduate clubs.

2002 – 2003 **Clubs' Committee Chair**, Students' Union, University of Calgary

Responsible for representing all student organizations on the Students Legislative Council. Achieved significant improvements to the existing bylaws and policies governing undergraduate student clubs

2002 – 2007 **Student Volunteer**, Computer Human Interaction Conferences, Various

Performed "quick response" duties for speakers and conference attendees. Took photographs and created several slide shows of conference events. Achieved CHI "hero" status in 2004.

Volunteered at GI 2002, CHI 2003, CHI 2004 and UIST 2005

2002 – 2003 **International Work Chair**, Rotaract Metro Calgary, Rotary Club in Calgary

Helped organize the Dragon Boat Festival in Calgary.

2001 – 2002 **President**, The Edge Magazine, University of Calgary

Started an undergraduate club responsible for publishing a monthly magazine for Computer Science Students. Obtained the Students Union Constituted Organization Special Achievement Award.

2000 – 2001 **President**, The Dot Coms Club, University of Calgary

Started an undergraduate club responsible for holding events and informative sessions related to the Internet. Supported an online marketplace for the university community.

AWARDS AND DISTINCTIONS

2004 – 2007 NSERC Post Graduate Scholarship for Doctoral Studies

2004 Faculty of Graduate Studies Travel Grant

2004 Science to Society Scholarship

2003 – 2007 iCORE Post Graduate Scholarship

2003 – 2007 Alberta Ingenuity Scholarship

2003 – 2004 NSERC Industrial Post Graduate Scholarship

2002 – 2003 Departmental Award

2002 – 2003 Graduate Assistantship Teaching Scholarship

2001 – 2002 NSERC Undergraduate Research Award

2002 DMR Consulting Group Inc. Scholarship

1999 – 2000 University of Calgary Undergraduate Awards

1998 Alexander Rutherford Scholarship

1998 Class of '78 Memorial Scholarship

1998 – 2001 University of Calgary Dean's List

INTERESTS

Photography: Travel, landscapes, cityscapes, macro and some portrait
Music & Arts: Electric and Acoustic Guitar, Oratorio singing, Puppetry
Sports: Squash, Tennis, Badminton, Skiing, Snowboarding, Hiking

REFERENCES

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