

# Xiang Cao

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## CONTACT INFO

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## RESEARCH INTERESTS

- **Human-computer interaction**, Computer vision

## PROFESSIONAL SKILLS

- **User experience research:** Usability test and inspection, qualitative and field study, quantitative and experimental study
- **Programming languages and tools:** C, C++, C#, BASIC, Pascal; OpenGL
- **Languages:** English, Chinese

## EDUCATION

### University of Toronto

*PhD in Computer Science (in progress, expected 2008)*

Thesis topic: Handheld projector interaction

Advisor: Ravin Balakrishnan

(Wolfond Scholarship in Wireless Information Technology 2005)

*Toronto, Canada*

Sep 2005 - present

### University of Toronto

*Master of Science in Computer Science*

Thesis: An Exploration of Gesture-based Interaction

Advisors: Allan D. Jepson, Ravin Balakrishnan

*Toronto, Canada*

Sep 2002 - Jan 2004

### Tsinghua University

*Bachelor of Engineering in Computer Science and Technology*

Thesis: Segmentation and Tracking of Semantic Objects in Video

(Tsinghua University Scholarship 1996, 1998, 1999)

*Beijing, China*

Sep 1996 - Jul 2000

## EXPERIENCE

### University of Toronto – Department of Computer Science

*Research Assistant* Dynamic Graphics Project (DGP)

Handheld projector interaction, Games for public displays

Large display interaction, Adaptive gesture interface

*Teaching Assistant*

Sep 2005 – present, Sep 2002 – Dec 2003

Sep 2005 – present

Sep 2002 – Mar 2004

### Microsoft Research

*Internship* Adaptive Systems and Interaction Group

Gestural interaction on interactive tabletop

*Redmond, USA*

Jul 2007 – Sep 2007

### IBM Almaden Research Center

*Internship* User Science & Experience Research Group

Modeling user performance of pen gestures

*San Jose, USA*

Jun 2006 – Sep 2006

### Siemens Ltd., China – User Interface Design Center

*Usability Consultant / Project Manager*

User interface consulting and research for various Siemens products

*Beijing, China*

Oct 2004 – Jul 2005

## Microsoft Research Asia

Beijing, China

*Visiting Scholar* Center for Interaction Design Jun 2004 – Sep 2004  
Design and evaluation of electronic presentation control techniques  
*Internship* User Interface / Internet Graphics Group May 2001 – May 2002  
Tabletop display interaction, Face tracking and animation

## Intel Beijing Research Center

Beijing, China

*Internship* Jul 2000 – Sep 2000  
Head/hand tracking system for human-computer interface

## Tsinghua University

Beijing, China

*Research Assistant* Dept. of Computer Science & Technology Feb 1999 - Jun 2000  
Object tracking, Face identification system, Computer organization instruction system

## SELECTED PUBLICATIONS

(complete list, videos, and downloads at [www.cs.toronto.edu/~caox/research.htm](http://www.cs.toronto.edu/~caox/research.htm))

- Xiang Cao, Michael Massimi, Ravin Balakrishnan. (2008 - in press). Flashlight Jigsaw: An Exploratory Study of an Ad-Hoc Multi-Player Game on Public Displays. *To appear in CSCW 2008, ACM Conference on Computer Supported Cooperative Work*. 10 pages.
- Xiang Cao, Jacky Jie Li, Ravin Balakrishnan. (2008). Peephole pointing: modeling acquisition of dynamically revealed targets. *Proceedings of CHI 2008, ACM Conference on Human Factors in Computing Systems*. p. 1699-1708. **CHI 2008 Best Paper Honorable Mention.**
- Xiang Cao, Clifton Forlines, Ravin Balakrishnan. (2007). Multi-user interaction using handheld projectors. *Proceedings of UIST 2007, ACM Symposium on User Interface Software and Technology*. p. 43-52.
- Xiang Cao, Shumin Zhai. (2007). Modeling human performance of pen stroke gestures. *Proceedings of CHI 2007, ACM Conference on Human Factors in Computing Systems*. p. 1495-1504.
- Xiang Cao, Ravin Balakrishnan. (2006). Interacting with dynamically defined information spaces using a handheld projector and a pen. *Proceedings of UIST 2006, ACM Symposium on User Interface Software and Technology*. p. 225-234.
- Xiang Cao, Ravin Balakrishnan. (2005). Evaluation of an online adaptive gesture interface with command prediction. *Proceedings of GI 2005, Graphics Interface Conference*. p. 187-194. **GI 2005 Best Student Paper Award.**
- Xiang Cao, Ravin Balakrishnan. (2003). VisionWand: Interaction techniques for large displays using a passive wand tracked in 3D. *Proceedings of UIST 2003, ACM Symposium on User Interface Software & Technology*. p. 193-202. **One of 3 papers invited to the UIST reprise session at ACM SIGGRAPH 2004.**
- Xiang Cao, Baining Guo. (2002). Real-time tracking and imitation of facial expression. *Proceedings of ICIG 2002, SPIE International Conference on Image and Graphics*. p. 910-918

## ACTIVITIES

- Demonstrations co-chair, ACM Symposium on User Interface Software & Technology (UIST) 2008.
- Paper reviewer: Transactions on CHI; CHI 2006,2007,2008; SIGGRAPH 2008; UIST 2006,2007,2008; CSCW 2006; GI 2005; VIS 2004.
- Student member, Association for Computing Machinery (ACM).
- Saxophone player, University of Toronto Hart House Symphonic Band, 2002-2004, 2006-2007.
- Principal euphonium player & teacher, Tsinghua University Symphonic Band, 1996-2002. (Championship of National University Band Competition 1999)