

Jingtao Wang

Department Computer Science
University of Pittsburgh
210 S Bouquet Street, Room 5423
Pittsburgh, PA 15260

Phone: (412) 624-8454
Fax: (412) 624-8854

jingtaow@cs.pitt.edu
<http://www.cs.pitt.edu/~jingtaow>

Learning Research and Development Center
University of Pittsburgh
3939 O'Hara Street, Room 702
Pittsburgh, PA 15260

Phone: (412) 624-7498
Fax: (412) 624-9149

Research Interests

Human Computer Interaction, Mobile Interfaces, Education/Learning Technology, Input and Interaction Techniques, Location Based Services, Machine Learning and its Applications in User Interfaces, Social Computing, Serious Games, Online Handwriting and Gesture Recognition Technology.

Professional Positions

Aug 2010 - present **Assistant Professor**
Department of Computer Science,
Learning Research and Development Center (joint appointment)
University of Pittsburgh, Pittsburgh, PA

Jul 1999 - Aug 2002 **Staff Research Member and Team Lead**
HCI and Pen Computing group
IBM China Research Lab, Beijing, China

Education

May 2010 **Ph.D., Computer Science**
University of California at Berkeley
Advisor: Professor John Canny
Dissertation: *Perceptual and Context Aware Interfaces for Mobile Devices*

June 1999 **M.S., Computer Engineering**
Xi'an Jiaotong University, China
Advisor: Professor Nanning Zheng
Dissertation: *Character Detection and Recognition in Complex Scene*

June 1996 **B.S., Electrical and Computer Engineering**
Xi'an Jiaotong University, China

Teaching and Advising

University of California at Berkeley

- Spring 2007 Industrial Design and Human Factors (IEOR 170, Industrial Design and Operational Research)
Sole Instructor Website: <http://lbs.cs.berkeley.edu/ieor170>
 Upper level undergraduate class, 3 units, 53 students enrolled
 Main theme of class projects: *Persuasive Design for Campus, City and Community*
- Fall 2009 Operating System and System Programming (CS162, Computer Science)
Graduate Student Instructor with Prof. John Kubiatowicz
- Fall 2008 Human Computer Interaction (CS160, Computer Science)
Graduate Student Instructor with Prof. John Canny
 Main theme of class projects: *Serious Games*
- Summer 2006 SUPERB Program (Summer Undergraduate Program in Engineering Research at Berkeley)
Mentor, Student: Carolyn Hafernik from Mount Holyoke College
 Project: *Camera Phone Based Presentation Control*
- Fall 2005 Human Computer Interaction (CS160, Computer Science)
Graduate Student Instructor with Prof. Stephen Arnold
 Main theme of class projects: *Mobile and Web based Interfaces*
- Summer 2005 SUPERB Program (Summer Undergraduate Program in Engineering Research at Berkeley)
Mentor, Student: John Suarez from James Madison University
 Project: *Discovering Human Route Planning Knowledge from Everyday Location Traces*

Xi'an Jiaotong University

- Spring 1997 Undergraduate Dissertation Project
Mentor and co-Advisor, Student: Xia Zhang
 Project: *Offline Recognition of Low-Resolution Chinese Characters*

Publications

Journal Papers (Peer-reviewed)

- [J-1] Yitao Duan, Jingtao Wang, Matthew Kam, and John Canny. **Privacy Preserving Link Analysis on Dynamic Weighted Graph**, In *Computational and Mathematical Organization Theory*, Volume 11, Issue 2, pp141-159, July 2005.

Conference Papers (Peer-reviewed)

- [C-1] Jingtao Wang, Shumin Zhai, and John Canny. **SHRIMP - Solving Collision and Out of Vocabulary Problems in Mobile Predictive Input with Motion Gesture**, In *Proceedings of ACM Conference on Human Factors in Computing Systems (CHI 2010)*, Atlanta, Georgia, April 10 -15, 2010. **CHI Best Paper Honorable Mention**
- [C-2] Feng Tian, Fei Lv, Jingtao Wang, Hongan Wang, Wencan Luo, Matthew Kam, Vidya Setlur, Guozhong Dai, and John Canny. **Let's Play Chinese Characters - Mobile Learning Approaches via Culturally Inspired Group Games**, In *Proceedings of ACM Conference on Human Factors in Computing Systems (CHI 2010)*, Atlanta, Georgia, April 10 -15, 2010.

- [C.3] Jingtao Wang, Shumin Zhai, and John Canny. **Camera Phone Based Motion Sensing : Interaction Techniques, Applications and Performance Study**, In *Proceedings of ACM symposium on User Interface Software and Technology (UIST 2006)*, pp101-110, Montreux, Switzerland, October 15 -18, 2006.
- [C.4] Jingtao Wang, and John Canny. **TinyMotion: Camera Phone Based Interaction Methods**, In *alt.chi of ACM Conference on Human Factors in Computing Systems (CHI 2006)*, pp339-344, Montreal, Canada, April 24-27, 2006.
- [C.5] Yitao Duan, Jingtao Wang, Matthew Kam, and John Canny. **A Secure Online Algorithm for Link Analysis on Weighted Graph**, In *Proceedings of SIAM International Conference on Data Mining*, Newport Beach, California, April 21-23, 2005.
- [C.6] Matthew Kam, Jingtao Wang, Alastair Iles, Eric Tse, Jane Chiu, Daniel Glaser, Orna Tarshish, and John Canny. **Livenotes: A System for Cooperative and Augmented Note-Taking in Lectures**. In *Proceedings of ACM Conference on Human Factors in Computing Systems (CHI 2005)*, pp. 531-540, Portland, Oregon, USA, April 5-7, 2005.
- [C.7] Jingtao Wang, and John Canny. **FingerSense - Augmenting Expressiveness of Physical Button by Fingertip Identification**, *Short Paper*, In *Proceedings of ACM Conference on Human Factors in Computing Systems (CHI 2004)*, pp1267-1270, Vienna, Austria, April 24-29, 2004.
- [C.8] Jingtao Wang, and Jennifer Mankoff. **Theoretical and Architectural Support for Input Device Adaptation**, In *Proceedings of ACM Conference on Universal Usability (CUU 2003)*, pp85-92, Vancouver, B.C., November 10-11, 2003.
- [C.9] Jingtao Wang, Zhepeng Wang, Hui Su, Atsushi Kumaki, and Arimasa Naitoh. **Handwriting on the Move : Using PDA as the Pen Input Device for Laptop Computers**, In *Proceedings of International Conference on Pervasive Computing 2002*, Zurich, Switzerland, August 26-28, 2002.
- [C.10] Jingtao Wang, Shumin Zhai, and Hui Su. **Chinese Input with Keyboard and Eye Tracking - An Anatomical Study**, in *Proceedings of ACM Conference on Human Factors in Computing Systems (CHI 2001)*, pp349-356, Seattle, Washington, March 31 - April 5, 2001.

Posters and Demos (Peer-Reviewed)

- [PD.1] Jingtao Wang, Danny Soroker, Chandra Narayanaswami, **Event Maps: A Collaborative Calendaring System for Navigating Large-Scale Events**, In *Work-In-Progress of ACM Conference on Human Factors in Computing Systems (CHI 2010)*, Atlanta, Georgia, April 10 - 15, 2010.
- [PD.2] Jingtao Wang, Shumin Zhai, and John Canny. **Camera Phone Based Motion Sensing**, Demo, *ACM symposium on User Interface Software and Technology (UIST 2006)*, Montreux, Switzerland, October 15 -18, 2006.
- [PD.3] Jingtao Wang, and John Canny. **End-User Place Annotation on Mobile Devices : A Comparative Study**, In *Work-In-Progress of ACM Conference on Human Factors in Computing Systems (CHI 2006)*, pp1493-1498, Montreal, Canada, April 24-27, 2006.

Technical Reports

- [TR.1] Jingtao Wang, Danny Soroker, Chandra Narayanaswami, **Event Maps : A Collaborative Calendaring System for Navigating Large-Scale Events**, Technical Report (#RC24971), IBM

T.J. Watson Research Center, 10/19/2009.

Patents

- [P.1] Dan Coffman, Jonathan Munson, Chandra Narayanaswami, Danny Soroker, and Jingtao Wang. **Tool and Method for Annotating an Event Map, and Searching and Collaborating Using the Annotated Event Map**, filed in Aug 2008, U.S. Patent Pending.
- [P.2] Dan Coffman, Jonathan Munson, Chandra Narayanaswami, Danny Soroker, and Jingtao Wang. **Tool and Method for Mapping and Viewing an Event**, filed in Aug 2008, U.S. Patent Pending.
- [P.3] Per-Ola Kristensson, Jingtao Wang, and Shumin Zhai. **System and Method for Recognizing Word Patterns in a Very Large Vocabulary Based on a Virtual Keyboard Layout**, filed in Mar 2004, U.S. Patent Pending No. 20050190973.
- [P.4] Jingtao Wang, Hui Su, Arimasa Naitoh, and Atsushi Kumaki. **System and Methods for Collaborative Handwriting Input**, filed in 2001, U.S. Patent Pending No. 20050147301.
- [P.5] Qianying Wang, and Jingtao Wang. **Loading advertisements in a Web page and displaying a Web page**, filed in 2000, U.S. Patent Pending No. 20020175935.
- [P.6] Jingtao Wang, Shumin Zhai, and Hui Su. **System and Method for Accelerating Chinese Text Input**, filed in 2000, U.S. Patent No. 7013258, Issued on Mar 14 2006.
- [P.7] Jingtao Wang, Donald Tang, Hui Su, and Qianying Wang. **System and Method for Network Based Input Platform**, filed in 1999, U.S. Patent No. 7290029, Issued on Oct 30 2007.

Invited Talks

- Jun 21 2010 **Perceptual and Context Aware Interfaces on Mobile Devices**, Invited Talk, The Carnegie Foundation for the Advancement of Teaching, *Stanford, CA*.
- May 26 2010 **Perceptual and Context Aware Interfaces on Mobile Devices**, Invited Talks on Computing Systems series, CMU Silicon Valley, *Moffett Field, CA*.
- Apr 1 2010 **Perceptual and Context Aware Interfaces on Mobile Devices**, Invited Talk, Samsung Electronics Research Lab, *San Jose, CA*.
- Mar 18 2010 **Perceptual and Context Aware Interfaces on Mobile Devices**, Invited Talk, Department of Computer Science, University of Pittsburgh, *Pittsburgh, PA*.
- Mar 10 2010 **Perceptual and Context Aware Interfaces on Mobile Devices**, Invited Talk, IBM Almaden Research Center, *San Jose, CA*.
- Mar 4 2010 **Perceptual and Context Aware Interfaces on Mobile Devices**, Invited Talk, IBM T.J. Watson Research Center, *Hawthorne, NY*.
- Mar 2 2010 **Perceptual and Context Aware Interfaces on Mobile Devices**, Invited Talk, InvenSense, *Sunnyvale, CA*.
- Feb 25 2010 **Perceptual and Context Aware Interfaces on Mobile Devices**, Invited Talk, Google Research, *Maintain View, CA*.
- Feb 24 2010 **Perceptual and Context Aware Interfaces on Mobile Devices**, Invited Talk, Nokia Palo Alto Research Center, *Palo Alto, CA*.
- Aug 12 2009 **EventMaps Round 3 : New Features, Insights and Lessons Learned**, CTI Department Seminar, IBM T.J. Watson Research Center, *Hawthorne, NY*.
- July 2 2009 **SHRIMP - Effective Mobile Text Input on Camera Phones**, Invited Talk, IBM T.J. Watson Research Center, *Hawthorne, NY*.

- Nov 10 2008 **Design Patterns: UIs, Games and Learning**, Guest Lecture for User Interface Design, Prototyping and Evaluation (CS160), Computer Science Division, UC Berkeley, *Berkeley, CA*.
- Aug 13 2008 **EventMaps: A System for Viewing, Collaborating and Mashing up Hierarchal Temporal Information**, CTI Department Seminar, IBM T.J. Watson Research Center, *Hawthorne, NY*.
- Apr 17 2008 **GLAZE - A System for Supporting End-User Generated Location Aware Applications on Cell Phones**, Joint Workshop on Mobility and Social Networking, UC Berkeley, *Berkeley, CA*.
- Dec 19 2007 **GLAZE - A System for Supporting End-User Generated Location Aware Applications on Mobile Devices**, Invited Talk, Samsung Electronics Research Lab, *San Jose, CA*.
- Sep 13 2007 **Perceptual and Context Aware Applications for Mobile Phones**, Invited talk, Samsung Electronics Research Lab, *San Jose, CA*.
- May 19-20 2007 **TinyMotion: Camera Phone Based Motion Sensing**, Invited exhibition and demonstration, Bay Area Maker Faire 2007, *San Mateo, CA*.
- Mar 5 2007 **Interaction Techniques with Mobile Devices**, Guest Lecture for User Interface Design, Prototyping and Evaluation (CS160), Computer Science Division, UC Berkeley, *Berkeley, CA*.
- Nov 22 2006 **Interaction Techniques with Mobile Devices**, Guest Lecture for User Interface Design, Prototyping and Evaluation (CS160), Computer Science Division, UC Berkeley, *Berkeley, CA*.
- Nov 21 2006 **TinyMotion: Camera Phone Based Motion Sensing**, Invited talk, Ricoh California Research Center, *Menlo Park, CA*.
- Sep 11 2006 **Camera Phone Based Motion Sensing: Interaction Techniques, Applications and Performance Study**, Invited talk, IBM China Research Lab, *Beijing, China*.
- Jun 28 2006 **Vision Based and Location Aware Applications for Mobile Phones**, Invited talk, IBM Almaden Research Center, *San Jose, CA*.
- Feb 6 2006 **Interaction Techniques with Mobile Devices**, Guest Lecture for User Interface Design, Prototyping and Evaluation (CS160), Computer Science Division, UC Berkeley, *Berkeley, CA*.
- Nov 23 2005 **Interaction Techniques with Mobile Devices**, Guest Lecture for User Interface Design, Prototyping and Evaluation (CS160), Computer Science Division, UC Berkeley, *Berkeley, CA*.
- Feb 3 2003 **Online Handwriting Recognition Technology - State of the Art**, Invited talk, Group for User Interface Research, UC Berkeley, *Berkeley, CA*.
- Oct 18 2000 **Touchpad based Asian Language Handwriting Input**, Invited talk, IBM Personal System Institute (PSI) Symposium 2000, *Raleigh, NC*.
- Oct 17 2000 **Continuous Chinese/Japanese Handwriting Recognition**, Invited talk, IBM Personal System Institute (PSI) Symposium 2000, *Raleigh, NC*.

Software Artifacts

- Event Maps Event Maps is a rich internet application intended to help people browse, organize and collaborate on large, multi-track conference events. Visitors can browse/search/navigate events of a conference via a zoomable interface. For users that have logged in, Event Maps supports collaboration features such as commenting, rating and tagging on conference events, corrections/updates for conferences can also be submitted easily via the primary interface. Conference organizers can create a new conference or import data from existing conferences easily via the Event Maps backend interface. Event Maps has been adopted by IEEE International Conference for Service Computing (SCC 2009), September 21-25, 2009 to host its official conference schedule. See [TR.1], [PD.1], [P.1], [P.2]. <http://conferences.computer.org/scc/2009/>
- GLAZE GLAZE, Generalized Location Aware modelZ for End-users, is a system and platform that enables the average end-user to create everyday location-aware applications directly on their cell phones. The GLAZE system provides a set of location-aware primitives named REWIND

(READ, WRITE and FIND) to help end-users model and generate their intended applications through the help of a set of form style smart templates. See [PD.3] <http://lbs.cs.berkeley.edu/glaze/>

- SHRIMP SHRIMP (Small Handheld Rapid Input with Motion and Prediction) is a system and method that supports effective text input on camera phones equipped with a standard 12-key keypad. SHRIMP is an open source project under the BSD license. See [C.1].
<http://www.cs.berkeley.edu/~jingtaow/SHRIMP/>
- TinyMotion TinyMotion is a pure software approach that detects the movements of cell phones in real-time by analyzing image sequences captured by the built-in camera. TinyMotion is an open source project released under the BSD license. Downloaded over 9,000 times since 2006. See [C.3], [C.4], [PD.2] <http://tinymotion.org>
- CloudWrite CloudWrite is a hobby-project to investigate the idea of “handwriting/gesture recognition on the cloud”. The front-end (ink capture, result display etc) is implemented in JavaScript (using VML, SVG or the Canvas tag depending on browsers) and the handwriting recognition engine is implemented “on the cloud” via Google Application Engine. CloudWrite will be used to explore the idea of handwriting recognition as a service and crowdsource handwriting data collection/labeling. <http://cwritepad.appspot.com/public/cwritepad.html>
- LiveNotes LiveNotes a note-taking application designed to support cooperative note-taking/sharing in a large classroom environment. The latest version is implemented for Tablet PC by using the TabletPC SDK and the .NET framework. LiveNotes is open source software released under the BSD license. See [C.6] <http://sourceforge.net/projects/livenotes/>
- IAT Input Adaptation Toolkit (IAT) is a system that can translate a user’s input from one modality to another without modifying the target application. IAT can make today’s existing GUI applications, which are usually optimized for a mouse and a keyboard, accessible to people who have to use alternative input devices. See [C.8] <http://www.cs.berkeley.edu/~jingtaow/IAT/>
- BlueGeneie BlueGenie includes both a hardware cradle and software to convert a PDA into a handwriting-digitizing tablet and error correction tool for laptop computers. This system became a commercial product (Thinkpad Ultra Cradle). See [C.9] and [P.4].
- AnityaPen AnityaPen is a large vocabulary, multi-lingual, lightweight handwriting recognizer for low resource mobile devices. It supports languages such as English, Simplified Chinese, Traditional Chinese and Japanese. AnityaPen can handle cursive writing style, broken strokes and is completely stroke order independent. It became a commercial product of IBM (Websphere Everywhere Suite Embedded Edition) and has been shipped in several PDA and smart phone products. The Mobile Gesture application in TinyMotion is based on AnityaPen. See [C.4].
<http://www.alphaworks.ibm.com/tech/chinese4palm>
- IBM InkManager Pro DBCS IBM InkManager Pro DBCS (Double Byte Character Set, i.e. Chinese and Japanese) edition is the world’s first commercial product that supports the recognition of full page, paragraph level recognition of East Asian online handwriting. It has been shipped with both IBM ThinkScribe (a.k.a. CrossPad) and ThinkPad TransNote (A Tablet/Pen computer that supports handwriting on the real paper). The later won an Industrial Design Excellence Award (IDEA) gold medal from BusinessWeek in 2001.

Honors and Awards

- 2010 CHI 2010 Best Paper Honorable Mention
- 2003 UC Berkeley Regents' Fellowship
- 2001 IBM Research Annual Excellent Performance
- 2001 IBM CRL Leadership Communications Award
- 2001 IBM Research Invention Achievement First Plateau Award
- 2001 IBM Long Term Performance Plan (Stock Option) Award
- 2000 IBM Research Annual Excellent Performance
- 2000 IBM Long Term Performance Plan (Stock Option) Award
- 1999 IBM Research Invention Achievement First Patent Application Award
- 1997 Excellent Teaching Assistant Award, Xi'an Jiaotong University
- 1996 First Class Aristek Fellowship, Xi'an Jiaotong University
- 1996 National System Analyst Certificate on Computer Software by the State Council of China
- 1995 National Senior Software Engineer Certificate by the State Council of China
- 1993 1st Place Winner, the 5th "Cait Cup" XJTU computer programming contest
- 1993 3rd Prize in XJTU Campus physics context
- 1993 1st Prize in XJTU Campus Advanced Mathematics Contest
- 1992, 1994, 1995 First Class Fellowship for Excellent Students, Xi'an Jiaotong University
- 1993 Second Class Fellowship for Excellent Students, Xi'an Jiaotong University

Professional Activities

- Reviewer ACM Human Factors in Computing Systems (*CHI*), 2004 – 2011
 ACM User Interface Software and Technology (*UIST*), 2004 – 2005, 2007 – 2010
 ACM Transactions on Computer Human Interaction (*ToCHI*), 2003, 2006, 2007, 2009
 ACM International Conference on Intelligent User Interface (*IUI*), 2010
 International Conference on Ubiquitous Computing (*Ubicomp*), 2009
- Student Volunteer ACM Human Factors in Computing Systems (*CHI*), 2003
 ACM Multimedia 2003
- Coordinator Weekly HCI group seminar (*BiD seminar*) at UC Berkeley, 2005 – 2008
- System Admin Wiki for Berkeley Institute of Design (*BiD*), 2005 - present
 Website and mailing list for Group for User Interface Research (*GUIR*), UC Berkeley, 2003-2005
- Member Association for Computing Machinery (*ACM*) since 2000
 ACM Special Interest Group of Computer Human Interaction (*SIGCHI*) since 2000