

Xiang Xiao

CONTACT INFORMATION	Department of Computer Science University of Pittsburgh Pittsburgh, PA 15260 USA	Voice: +1 (412) 614-0757 E-mail: mitchell.xiao@gmail.com WWW: http://www.cs.pitt.edu/~xiangxiao
RESEARCH INTERESTS	Human Computer Interaction, especially Mobile Interfaces, Intelligent Interactive Systems, Learning Technologies, Machine Learning and Its Application in User Interfaces.	
EDUCATION	University of Pittsburgh , Pittsburgh, Pennsylvania USA	December 2016 (<i>expected</i>)
	Ph.D. Candidate, Computer Science	GPA: 3.73/4.0
	<ul style="list-style-type: none">• Dissertation: “Improving Mobile MOOC Learning via Implicit Physiological Signal Sensing”• Advisor: Jingtao Wang (jingtaw@cs.pitt.edu)• Google Scholar Profile: https://scholar.google.com/citations?user=jYx0cwkAAAAJ	
	Wuhan University , Wuhan, Hubei China	May, 2010
	B.Eng., Software Engineering	GPA: 3.54/4.0; Rank: 1 st /34
EXPERIENCE	University of Pittsburgh , Pittsburgh, PA	09/2011 - current
	<i>Graduate Student Researcher, Department of Computer Science</i>	Mentor: Jingtao Wang
	Designed and prototyped <i>mobile interaction techniques</i> , <i>mobile interfaces</i> , and <i>intelligent learning systems</i> on the Android platform. Designed and conducted <i>formal user studies</i> to evaluate usability and effectiveness of the proposed mobile interfaces. Main projects:	
	<ul style="list-style-type: none">• <i>AttentiveLearner: Improving Mobile MOOC Learning via Implicit Physiological Signal Sensing and Cognitive States Inference on Unmodified Smartphones</i><ul style="list-style-type: none">– Designed and developed a mobile MOOC learning system, AttentiveLearner, which implicitly captures learners’ physiological signals on unmodified mobile phones via the built-in camera while they watch MOOC videos. Developed machine learning algorithms to predict learners’ cognitive states (boredom, confusion, divided attention) using the collected physiological signals. Implemented an adaptive intervention technique in AttentiveLearner which detects and responds to the learner’s boredom state in real-time while they use AttentiveLearner. Improved average learning gains by 20.2% compared with a baseline system in a 48 participant user study.• <i>LivePulse: Real-time Camera Phone Based Heart Rate Monitoring</i><ul style="list-style-type: none">– Developed a low-latency, real-time heart rate monitoring algorithm on unmodified smartphones by detecting and analyzing the transparency changes of users’ fingertips captured by the back camera. Prototyped three serious <i>mobile games</i> using the AndEngine Game Engine which integrated heart rate monitoring implicitly in the game play. LivePulse games are open source.• <i>LensGesture: Augmenting Mobile Interactions with Back-of-Device Finger Gestures</i><ul style="list-style-type: none">– Designed and implemented an interaction technique which allows users to operate mobile devices through various finger gestures on the lens of the back camera. On-lens gestures are detected by analyzing image sequences captured by the built-in camera using machine learning classifiers and movement detection algorithms. LensGesture is open source.	
	Harman International, Future Experience Team , Palo Alto, CA	06/2015 - 08/2015
	<i>Future Experience Intern</i>	Mentor: Davide Di Censo
	Designed and prototyped a mid-air gesture-based human machine interface around a new haptic technology. Explored the best interaction method and application for this haptic technology within Harman’s domains. Used Leap Motion to track hands and recognize mid-air gestures. Used Qt5 to develop GUI of the system.	

CONFERENCE
PUBLICATIONS

Xiang Xiao and Jingtao Wang. Understanding and Detecting Divided Attention in Mobile MOOC Learning. *Proceedings of the 35rd Annual ACM Conference on Human Factors in Computing Systems (CHI)*, 2017. (to appear)

Xiang Xiao and Jingtao Wang. Context and Cognitive State Triggered Interventions for Mobile MOOC Learning. *Proceedings of the 2016 ACM on International Conference on Multimodal Interaction (ICMI)*, 2016.

Xiang Xiao and Jingtao Wang. Towards Attentive, Bi-directional MOOC Learning on Mobile Devices. *Proceedings of the 2015 ACM on International Conference on Multimodal Interaction (ICMI)*, 2015. [**Best Student Paper Nomination**]

Xiang Xiao, Phuong Pham, and Jingtao Wang. AttentiveLearner: Adaptive Mobile MOOC Learning via Implicit Cognitive States Inference. *Proceedings of the 2015 ACM on International Conference on Multimodal Interaction (ICMI)*, 2015. [**Demonstration**]

Teng Han, **Xiang Xiao**, Lanfei Shi, John Canny, and Jingtao Wang. Balancing Accuracy and Fun: Designing Engaging Camera Based Mobile Games for Implicit Heart Rate Monitoring. *Proceedings of the 33rd Annual ACM Conference on Human Factors in Computing Systems (CHI)*, 2015.

Teng Han, Lanfei Shi, **Xiang Xiao**, John Canny, and Jingtao Wang. Designing engaging camera based mobile games for implicit heart rate monitoring. *Proceedings of the extended abstracts of the 32nd annual ACM Conference on Human Factors in Computing Systems (CHI)*, 2014. [**Work-In-Progress**]

Xiang Xiao, Teng Han, and Jingtao Wang. LensGesture: Augmenting Mobile Interactions with Back- of- Device Finger Gestures. *Proceedings of the 2013 ACM on International Conference on Multimodal Interaction (ICMI)*, 2013.

JOURNAL
PUBLICATIONS

Corey D. Stein, **Xiang Xiao**, Steven Levine, Titus KL Schleyer, Harry Hochheiser, and Thankam P. Thyvalikakath. A Prototype Mobile Application for Triaging Dental Emergencies. *The Journal of the American Dental Association*, 2016.

SOFTWARE
RELEASE

LensGesture: a mobile interaction technique via finger gestures on the back camera lens of unmodified mobile phones

- Source code: <http://mips.lrdc.pitt.edu/lensgesture/>

LivePulse Games: mobile games which measure users' heart rate in real time during gameplay on camera phones

- Source code: <http://mips.lrdc.pitt.edu/livepulsegames/>

SKILLS

- Java, C++, Matlab
- Weka, LibSVM, JMP, Arduino, CAD, OpenCV, Linux

HONORS & AWARDS

- Computer Science Graduate Poster Competition Runner-Up, University of Pittsburgh 03/2015, 03/2013
- Computer Science Digital Media Competition Winner, University of Pittsburgh 2013, 2014, 2015
- Computer Science Graduate Research Competition Winner, University of Pittsburgh 03/2013
- Arts and Sciences Fellowship, University of Pittsburgh 2010 - 2011

- Outstanding Graduate of Bachelor's Degree, Wuhan University 2010
- National Endeavor Fellowship, Ministry of Education of China 2009
- Outstanding Student, Wuhan University 2008, 2009