

# Tianxing Li

Address: Lab 147 Sudikoff Building, Dartmouth College, NH 03755 • E-mail: [tianxing@cs.dartmouth.edu](mailto:tianxing@cs.dartmouth.edu) • Website: <http://cs.dartmouth.edu/~ltx/>

## EDUCATION

Sept. 2014- Present	<b>DARTMOUTH COLLEGE</b> <i>Ph.D., Computer Science</i> Advisor: Prof. Xia Zhou	Hanover, NH
Sept. 2012- Jun. 2014	<b>DARTMOUTH COLLEGE</b> <i>Master, Computer Science</i> Overall GPA: 3.6/4.0	Hanover, NH
Oct. 2009-Dec. 2011	<b>AUSTRALIAN NATIONAL UNIVERSITY</b> <i>Bachelor, Electronics and Telecommunications Engineering (Major), Photonics (Minor)</i> Overall GPA: 3.3/4.0 Major GPA: 3.4/4.0, Ranking: 19/213	ACT, Australia
Sept. 2007-Sept. 2009	<b>BEIJING INSTITUTE OF TECHNOLOGY</b> <i>Bachelor, Electronics and Telecommunications Engineering</i> Overall GPA: 3.6/4.0, Ranking: 9/66	Beijing, China

## HONORS & AWARDS

- Best Paper Nominee Award at Sensys'17
- SIGMOBILE Research Highlights Award 2016
- Best Video Award at MobiCom'15
- 3rd place of Neukom Prize for Outstanding Graduate Research at Dartmouth College
- Best Demo Award at MobiSys'15
- Bronze Medal of Student Research Competition at MobiCom'14
- Best Paper Award at VLCS'14
- Best Paper Nominee Award at UbiComp'14

## PUBLICATIONS

- [1] Tianxing Li, Qiang Liu, and Xia Zhou, Ultra-Low Power Gaze Tracking for Virtual Reality, SenSys 2017. **Best Paper Nominee**
- [2] Tianxing Li, Xi Xiong, Yifei Xie, George Hito, Xing-Dong Yang, and Xia Zhou, Reconstructing Hand Poses Using Visible Light, UbiComp 2017.
- [3] Tianxing Li, Qiang Liu, and Xia Zhou, Practical Human Sensing in the Light, MobiSys 2016. **SIGMOBILE Research Highlights Award**
- [4] Tianxing Li, Chuankai An, Zhao Tian, Andrew T. Campbell, and Xia Zhou, Human Sensing Using Visible Light Communication, MobiCom 2015. **Best Video Award**
- [5] Chuankai An, Tianxing Li, Zhao Tian, Andrew T. Campbell, and Xia Zhou, Visible Light Knows Who You Are, VLCS 2015.
- [6] Tianxing Li, Chuankai An, Ranveer Chandra, Andrew T. Campbell, and Xia Zhou, Low-Power Pervasive Wi-Fi Connectivity Using WiScan, UbiComp 2015.
- [7] Tianxing Li, Chuankai An, Xinran Xiao, Andrew T. Campbell, and Xia Zhou, Real-time screen-camera communication behind any scene, MobiSys 2015. **Best Demo Award**
- [8] Tianxing Li, Chuankai An, Andrew Campbell, and Xia Zhou, HiLight: Hiding Bits in Pixel Translucency Changes, VLCS 2014. **Best Paper Award**
- [9] Rui Wang, Fanglin Chen, Zhenyu Chen, Tianxing Li, Gabriella Harari, Stefanie Tignor, Xia Zhou, Dror Ben-Zeev, and Andrew T. Campbell, StudentLife: Assessing Behavioral Trends, Mental Well-being and Academic Performance of College Students using Smartphones, UbiComp 2014. **Best Paper Nominee**
- [10] Zhenyu Chen, Mu Lin, Fanglin Chen, Lane, N.D., Cardone, G., Rui Wang, Tianxing Li, Yiqiang Chen, Choudhury, T. Campbell, A.T., Unobtrusive sleep monitoring using smartphones, Pervasive Health 2013.
- [11] Fang Wang, Tianxing Li, Yi Li, Dual deblurring leveraged by image matching, ICIP 2013.

## ACTIVITIES

### Co-chair

- ACM S3 2017 workshop (in conjunction with ACM MobiCom 2017)
- Ph.D. Forum 2017 workshop (in conjunction with ACM MobiSys 2017)

### TPC member

- CRYBLOCK 2018 workshop (in conjunction with ACM MobiSys 2018)
- Ph.D. Forum 2018 workshop (in conjunction with ACM MobiSys 2018)
- ACM S3 2016 workshop (in conjunction with ACM MobiCom 2016)
- Ph.D. Forum 2016 workshop (in conjunction with ACM MobiSys 2016)

### Reviewer

- IEEE Wireless Communication Letters
- IEEE Transactions on Mobile Computing

- Computers
- UbiComp 2015
- Mobile Information System

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## RESEARCH EXPERIENCES

- Oct. 2016 – Aug. 2017 **DARTMOUTH COLLEGE** Hanover, NH  
***Ultra-Low Power Gaze Tracking for Virtual Reality, DartNets Lab***
  - Designed an ultra-low power gaze tracker, called LiGaze, using just a few low-cost photodiodes.
  - LiGaze achieves 6.3° and 10.1° mean within-user and cross-user accuracy.
  - Its sensing and computation consume 791  $\mu$ W in total and thus can be completely powered by a credit-card sized solar cell harvesting energy from indoor lighting.
- Jan. 2016 – Sept. 2016 **DARTMOUTH COLLEGE** Hanover, NH  
***Reconstructing Hand Poses Using Visible Light, DartNets Lab***
  - Built a smart lamp Aili testbed using off-the-shelf LEDs and photodiodes.
  - Aili achieves 10.2° mean angular deviation and 2.5-mm mean translation deviation in comparison to Leap Motion.
- Apr. 2015 – Dec. 2015 **DARTMOUTH COLLEGE** Hanover, NH  
***Practical Human Sensing in the Light, DartNets Lab***
  - Built a 3.6 m  $\times$  4.8 m StarLight testbed using off-the-shelf LEDs and photodiodes.
  - Designed an intelligent algorithm to reconstruct the 3D user skeleton at 40 Hz in real time with 14 degrees mean angular error for five body joints and 4-cm 2D localization error on average.
- Dec. 2014 – Mar. 2015 **DARTMOUTH COLLEGE** Hanover, NH  
***Human Sensing Using Visible Light Communication, DartNets Lab***
  - Studied the use of light as a passive sensing medium that senses our behaviors.
  - Built a 3 m  $\times$  3 m LiSense testbed using off-the-shelf LEDs and photodiodes.
  - Designed an intelligent algorithm to reconstruct the 3D user skeleton at 60 Hz in real time with 10 degrees mean angular error for five body joints
- Mar. 2014 – Dec. 2015 **DARTMOUTH COLLEGE** Hanover, NH  
***Real-time Screen-camera Communication Behind Any Scene, DartNets Lab***
  - Designed and built HiLight using off-the-shelf smart devices, the first system that realizes on-demand data transmissions in real time unobtrusively atop arbitrary screen content
- Sept. 2013-Mar. 2014 **DARTMOUTH COLLEGE** Hanover, NH  
***Low-Power Pervasive Wi-Fi Connectivity Using WiScan, DartNets Lab***
  - Analyzed and evaluated existing Wi-Fi scanning performance based on power consumption and connectivity metrics
  - Rebuilt Android framework so Wi-Fi chipset within mobile devices could perform background scanning with adaptive scan interval
  - Created an algorithm to predict potential offloaded SSID list and adjust Wi-Fi scan interval, based on multiple sensing results (i.e. moving direction and GPS)
- Jan. 2013-May 2013 **DARTMOUTH COLLEGE** Hanover, NH  
***StudentLife: Assessing Mental Health, Academic Performance and Behavioral Trends of College Students using Smartphones, DartNets Lab***
  - Studied relationship between students' daily activities, mental health, and academic performance by collecting and analyzing mobile sensors data (i.e. GPS, Bluetooth, battery usage, Wi-Fi, etc.) and survey data, such as "Flourishing" survey and "BIG five personality"
  - Created an Android application to periodically collect data from Dartmouth College students.
  - Built a Python and Apache server and a PHP and SQL database to store and manage the uploaded data
- Jan. 2013-Mar. 2013 **DARTMOUTH COLLEGE** Hanover, NH  
***Unobtrusive Sleep Monitoring Using Smartphones, DartNets Lab***
  - Created a method called "best effort sleep" (BES) to predict sleep duration by exploiting a collection of soft hints that tie sleep duration to various smartphone usage patterns. (i.e. prolonged silence or the smartphone remaining unused and completely still)
  - Inferred sleep duration ( $\pm$  42 minutes) using a completely "hands off" approach that accounts for natural variations in users' sleep routines and environments
- Mar. 2011-Mar. 2012 **NATIONAL ICT CENTRE & AUSTRALIA NATIONAL UNIVERSITY** ACT, Australia  
***Dual deblurring leveraged by image matching, Computer Vision Group***
  - Performed a two-directional dual image de-blurring, which uses the Split Bregman method, and matched the latent clear image pairs by a homograph
  - Extended an iterative blind dual image deblurring method to handle matching penalty, and simultaneously estimate the blur kernels and recover latent clear image pair
  - Designed an algorithm with small matching error using both synthetic and real images pairs
- Nov. 2010-Mar. 2011 **NATIONAL ICT CENTRE** ACT, Australia  
***Kernel-based Tracking from a Probabilistic Viewpoint, Computer Vision Group***
  - Conducted mean-shift algorithm and probabilistic viewpoint to track objects in image sequences

- Implemented MATLAB and C++ to program kernel functions, using the method from "Q.Nguyen, A. Robles- Kelly, C. Shen, Kernel-based tracking from a Probabilistic Viewpoint. IEEE, CVPR 2007"
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## INDUSTRY EXPERIENCES

Jun. 2013-Aug. 2013 **THE COMPANY LAB** Chattanooga, TN

*Software development engineer intern, Sisasa, Inc.*

- Developed a mobile banking application on both Android and iOS platforms to improve financial literacy in young adults.
- Created a backend database to store financial literature, utilizing Amazon S3 server.
- Integrated gamification elements, such as ranking and achievements, into the banking application.
- Cooperated with TransCard, LLC. to secure users' banking information.

Apr. 2012-Aug. 2012 **BEIJING FULIKE CO., LTD** Beijing, China

*Software development engineer*

- Designed and created a new software, "User Management System for Hemodialysis", for hospitals to manage patients' information. The system has been tested and used in at least three large hospitals in Beijing since June 2012. Each of them has more than 300 patients.
- Designed and implemented new UI for the system, using Java SWT.
- Implemented a driver for the system to communicate between port 232 and USB port.
- Created an SQL database for the system backend.