

Muyuan Li

PERSONAL DATA

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EDUCATION

SEP 2013 – PRESENT Ph.D. Computer Science and Engineering
State University of New York at Buffalo, Buffalo, NY, US
Advisor: Dr. Kui REN

SEP 2009 – JUNE 2013 B.E. Computer Science and Engineering
Shanghai Jiao Tong University, Shanghai, China
THESIS: Security and Privacy in Mobile Social Networks.
Advisor: Dr. Haojin ZHU

PUBLICATIONS

- IEEE ICDCS'15* | **CrowdMap: Accurate Reconstruction of Indoor Floor Plan from Crowdsourced Sensor-Rich Videos**
Authors Si Chen, **Muyuan Li**, Kui Ren, and Chunming Qiao
We propose a low-cost crowdsourced method to reconstruct indoor floor plan that utilize sensor-rich video data from mobile users. We innovatively exploit the sequential relationship between consecutive frames to improve system performance. Our experiments in three college buildings demonstrate that we achieve a hallway shape precision of 88%.
- ACM MobiHoc'14* | **All Your Location are Belong to Us: Breaking Mobile Social Networks for Automated User Location Tracking**
Authors **Muyuan Li**, Haojin Zhu, Zhaoyu Gao, Si Chen, Le Yu, Shangqian Hu, and Kui Ren
Links: www-student.cse.buffalo.edu/~muyuanli/presentations/mobihoc14/index.html
We identify severe location privacy leaks from popular location based social networks (e.g. Momo, SKout and Wechat) that allows non-privileged attacker to effectively pinpoint users' locations and even perform long-term tracking to reveal identity. We develop an automated user location tracking system and test it on the these LBSNs. We demonstrate its effectiveness and efficiency via a 3 week real-world experiment with 30 volunteers. Our evaluation results show that we can geo-locate a target with high accuracy and can readily recover users' Top 5 locations. We also propose to use grid reference system and location classification to mitigate the attacks.
- IEEE Globecom'12* | **PriMatch: Fairness-aware secure friend discovery protocol in mobile social network**
Authors **Muyuan Li**, Zhaoyu Gao, Haojin Zhu, Suguo Du, Mianxiong Dong, and Kaoru Ota
We identify a new security threat arising from existing secure friend discovery protocols – runaway attack, which is expected to introduce serious fairness issue. We introduce a novel blind vector transformation technique to hide the correlation between the original vector and the transformed result. Based on it, we propose our fairness-aware privacy preserving interest/profile matching protocol that enables one party to match its interest with the profile of another, without revealing its real interest and profile and vice versa. The detailed security analysis as well as real-world implementations demonstrate the effectiveness and the efficiency of the proposed protocol.
- IEEE Infocom'14* | **POSTER: Enabling Private and Non-Intrusive Smartphone Calls with LipTalk**
Authors **Muyuan Li**, Si Chen, and Kui Ren
- IoT (IEEE Trans), 2014* | **PriWhisper: Enabling Keyless Secure Acoustic Communication for Smartphones**
Authors Bingsheng Zhang, Zhan Qin, Si Chen, **Muyuan Li**, Kui Ren, Cong Wang, and Di Ma

<i>IEEE Infocom'13</i>	Location Privacy in Database-driven Cognitive Radio Networks: Attacks and Countermeasures
Authors	Zhaoyu Gao, Haojin Zhu, Yao Liu, Muyuan Li , and Zhenfu Cao
	We use Hidden Markov model to address location privacy issue proposed in our previous work. The user will be able to learn and report in spectrum usage in a manner that would minimize its risk of exposing location.
<i>TETC (IEEE Trans), 2013</i>	Fairness-Aware and Privacy-Preserving Friend Matching Protocol in Mobile Social Networks
Authors	Haojin Zhu, Suguo Du, Muyuan Li , and Zhaoyu Gao
<i>ACM CCS'12</i>	POSTER: Location Privacy Leaking from Spectrum Utilization Information in Database-driven Cognitive Radio Networks
Authors	Zhaoyu Gao, Haojin Zhu, Yao Liu, Muyuan Li , and Zhenfu Cao
	We discover location privacy issues in spectrum query from centralized database that each spectrum query shall expose an available or unavailable region of the user. After several days of use, the malicious service provider will be able to derive a user's location.

PROJECTS

<i>MobiHoc'14 App</i>	FreeTrack: Tracking Mobile Social Network Users
Links	GitHub: github.com/kkspeed/FreeTrack
Techniques	Clojure, Android (App Dev, Disassembly with Smali, MonkeyRunner)
	Location tracking platform for MobiHoc'14 paper
<i>MobiCom'2013 App Competition</i>	AcousAuth A smartphone empowered personal authentication system exploiting keyless acoustic communication
Authors	Si Chen, Muyuan Li , Jun Wang, Yujin Tu, Chao Zhang, Bingsheng Zhang, Zhan Qin, Junfei Wang, Kui Ren
Links	GitHub: quakeoday.github.io/Jigglypuff Vimeo: vimeo.com/77708077
Techniques	Android, Web.py
	AcousAuth is a smartphone empowered system we designed for personal authentication featuring a seamless, faster, easier and safer user authentication process without the need for special infrastructure.
<i>Hacking</i>	PigLet: A Logic-Free HTML Templating Engine for Haskell
Links	GitHub: github.com/kkspeed/PigLet
Techniques	Haskell (Template Haskell)
	This project provides a logic-free HTML templating engine that is loosely based upon Clojure's Enlive. It compiles HTML to Blaze-HTML generator and allows users to attach transformations, achieving a completely separation of frontend presentation and backend logic.
<i>Hacking</i>	Orion-mod: Enabling PDF Reflow in Orion Viewer for Nook2
Links	GitHub: github.com/kkspeed/orion-mod
Techniques	Android, JNI, C
	This project is a personal test field on tweaking Orion Viewer (mainly for Nook Simple Touch). This project is based on the Orion Viewer by Michael Bogdanov. I add features including PDF reflow (based on k2pdfopt), text OCR and several minor improvements.
<i>Hacking</i>	BitParser: Parsec Integration for Bitstream
Links	GitHub: github.com/kkspeed/bitparser
Techniques	Haskell
	This project integrates bitstream and parsec for expressive parsing specification of binary data
<i>Hacking</i>	pintex: Beamer + Pinpoint
Links	GitHub: github.com/kkspeed/pintex
Techniques	Haskell
	This project aims to combine the power of Pinpoint and Beamer Beamer to produce fancy presentation while preserving Beamer's flexibility / elegance in preparing materials.

WORK EXPERIENCE

<i>Summer 2012</i>	Summer Analyst Intern at Morgan Stanley IT Shanghai I built a system with a scheduler to carry out disk storage monitoring jobs with a centralized database driven system; a user friendly web UI for monitoring the status of each task; a configuration file generation facility that will aid a user to write correct and concise YAML files. This project was given highest regard among all 70 interns in IT department.
Techniques Scale	Perl(Catalyst, DBIx), DB2, Javascript(jQuery), HTML, CSS(Bootstrap UI) Approximately 7700 lines of code by myself within 2 months.
<i>June 2011 – June 2013</i>	Web Developer at Xiao5 Network Technology Ltd A website for online dinner booking and delivery. Popular among students in Beijing Institute of Technology.
Techniques Scale	Python(Django), MySQL, Nginx, Javascript(jQuery), HTML, CSS Approximately 11000 lines of code by 3 developers within 3 weeks
<i>Oct 2010</i>	Volunteer at Shanghai Expo 2010 Being a volunteer outside the Expo Park to provide information for visitors to the Shanghai Expo, I managed to develop a system that crawls data on number of visitors in Expo and display them on screens around the station. The tool is highly praised by other visitors.
Techniques Scale	Python (pyGTK, urllib) Approximately 200 lines in 3 hours

SCHOLARSHIPS

SEPT 2013 – PRESENT	Presidential fellowship, University at Buffalo
OCT 2012 AND OCT 2010	Academic Excellence Scholarship (Third-class), Shanghai Jiao Tong University

HONORS

SEPT 2012	The CCF(China Computer Federation) Undergraduate Award The China Computer Federation award around 100 undergraduate students each year in China for outstanding academic performance and strong social responsibility.
APRIL 2012	Meritorious Winner in The Interdisciplinary Contest in Modeling(ICM'2012) Modeling with 2 other team members in 4 days with all experiment and simulation carried out and finish 20-page essay. Approximately 13% out of more than 1000 total participate teams win this award.

COMPUTER SKILLS

Heavily used	Haskell, Clojure, Common Lisp, Python
Learning	C++, Perl, Javascript, Go, Scala
Hacking around	Android, Smali disassembly for APKs
OS	Heavy Gentoo Linux user with insight into Linux kernel
Authoring	Emacs Org-mode, \LaTeX