Muyuan Li

Personal Data

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Education

Sep 2013 – present
PhD. 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

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
We identify severe location privacy leaks from popular location based social networks (e.g. Momo, SKout and Wechat) that allows non-priviledged 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

IEEE Infocom'13
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 combat 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.

TETC (IEEE Trans), 2013
Fairness-Aware and Privacy-Preserving Friend Matching Protocol in Mobile Social Networks

Authors | Haojin Zhu, Suguo Du, **Muyuan Li**, and Zhaoyu Gao

ACM CCS'12 | **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

MobiCom'2013 App Competition | **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: quake0day.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.

Hacking | **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.

Hacking | **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 / elegancy in preparing materials.

Work Experience

Summer 2012 | **Summer Analyst Intern at Morgan Stanley IT Shanghai**

Built up a scheduler to carry out disk storage monitor jobs to provide a centralized database driven management and a user friendly web UI for monitoring the status of each task running in New York data center. A friendly configuration file generating 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 | Perl(Catalyst, DBIx), DB2, Javascript(jQuery), HTML, CSS(Bootstrap UI)

Scale | Approximately 7700 lines of code by myself within 2 months.

June 2011 – June 2013 | **Web Developer at Xiao5 Network Technology Ltd**

A website to for online dinner booking and delivery. Popular among students in Beijing Institute of Technology.

Techniques | Python(Django), MySQL, Nginx, Javascript(jQuery), HTML, CSS

Scale | Approximately 11000 lines of code by 3 developers within 3 weeks

Oct 2010 | **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 | Python (pyGTK, urllib)

Scale | Approximately 200 lines in 3 hours

Scholarships

Sept 2013	**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	Clojure, Common Lisp, Python
Learning	Haskell, Scala, 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

Interests and Activities

I enjoy the elegance of functional programming. I like open source projects and hacking.