Xiaohan Zhao

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Research Interests

Social Network Analysis and Modeling: My work focuses on ananlyzing and modeling both the static social network topologies and network dynamics. My work aims to design fast and effiecient embedding systems,(*i.e. Rigel*), to analyze massive social graphs. My work also builds graph evolution models based on the measured dynamic properties in OSNs.

Graph privacy: Anonymized Graphs can be deanonymized based on graph structure leading to users' privacy exposure. My work applies differential privacy to preserve the privacy of graph topolygy. I propose a new model, *i.e. Pygmalion*, to generate the synthetic graphs with required privacy guarantees.

Social Network Security: My work targets on the measurement of evil crowd-sourcing systems in OSNs (*i.e.* Crowdturfing). My work proves that sybil accounts are managed by groups of people instead of automatic scripts, the evil crowd-sourcing activities increases in both users and revenues and explode throughout the whold world. This shines a light onto the understanding of Sybil Attacks in OSNs.

Education

Ph.D. in Computer Science (Advisor: Ben Y. Zhao) — Aug. 2009 - Present
University of California, Santa Barbara

M.S. in Electronic Engineering (Advisor: Beixing Deng) — Sept. 2007 - Jul. 2009
Tsinghua University, China

B.E. in Electronic Engineering — Aug. 2003 - Jul. 2007
Tsinghua University, China

Academic Experience

Project: *Dynamic Graph Analysis and Modeling* — Jun. 2011 - Present

- Analyze the evolution of dynamic graphs
- Identify key dynamic features
- Model the dynamic graphs

Project: *Crowdturfing measurement and analysis* — Apr. 2011 - Jun. 2011

- Understand Crowdturfing system and work flow
- Measure revenue flow in Crowdturfing systems
- Analyze information cascade on OSNs performed by Crowdturfing systems

Project: *Differential Privacy in Graphs (Pygmalion)* — Oct. 2010 - Apr. 2011

- Defend de-anonymizeing attack in Social networks
- Provide Differential Privacy in anonymous social network data
- Preserve Usability of differentially private graphs

Project:*Massive Social Graph Embedding (Rigel)* — Aug.2009 - Oct. 2010

- Map social graphs into geometric spaces

- Utilize nodes' coordinates to estimate shortest path accurately and efficiently

Publications

Gang Wang, Christo Wilson, **Xiaohan Zhao**, Yibo Zhu, Manish Mohanlal, Haitao Zheng, Ben Y. Zhao. Serf and Turf: Crowdturfing for Fun and Profit. To appear in Proceedings of *World Wide Web Conference 2012*. Lyon, France, April 2012.

Xiaohan Zhao,Alessandra Sala, Haito Zheng and Ben Y. Zhao. Efficient Shortest Paths on Massive Social Graphs. Appear in *Proceedings of CollaborateCom 2011, Orlando, USA, Oct 2011.* (**Invited Paper**)

Alessandra Sala,**Xiaohan Zhao**, Christo Wilson, Haitao Zheng and Ben Y. Zhao. Sharing Graphs using Differentially Private Graph Models. Appear in *Proceedings of The 11th ACM SIGCOMM IMC,Berlin, Germany, November 2011.*

Xiaohan Zhao, Alessandra Sala, Christo Wilson, Haitao Zheng and Ben Y. Zhao. Orion: Shortest Path Estimation for Large Social Graphs. Appear in *Proceedings of The 3rd Workshop on Online Social Networks (WOSN), Boston MA, June 2010.*

Xiaohan Zhao, Xiaoxiao Song, Xiao Wang, Yang Chen, Beixing Deng, Xing Li. Analysis of Security Policy in Practical Internet Coordinates. Appear in *International Journal of Security and Its Applications, Vol.3, No.1, 2009.*

Xiaohan Zhao, Xiaoxiao Song, Xiao Wang, Yang Chen, Beixing Deng, Xing Li. Attacks against Network Coordinate System: Vulnerable PIC. Appear in *the 2008 International Symposium on Computer Science and its Applications (CSA'08), Hobart, Australia, Oct. 2008.*

Xiaohan Zhao, Xiaohui Shi, Yang Chen, Beixing Deng. Design and implementation of multicast tree system oriented MDC. Appear in *Journal of Xiamen University(Natural Science),Vol.46,Sup.2:216-218*(in Chinese).

Xiaoxiao Song, **Xiaohan Zhao**, Eng Keong Lua, Zengbin Zhang, Beixing Deng, Xing Li. SLINCS: A Social Link based Evaluation System for Network Coordinate Systems. (Short Paper).Appear in *2009 6th Annual IEEE Consumer Communications & Networking Conference (CCNC'09), Las Vegas.*

Yang Chen, Xiao Wang, Xiaoxiao Song, Eng Keong Lua, Cong Shi,**Xiaohan Zhao**, Beixing Deng, Xing Li. Phoenix: Towards an Accurate, Practical and Decentralized Network Coordinate System. Appear in *8th International IFIP-TC6 Networking Conference (Networking'09), Aachen, Germany, May 2009.*

Press Coverage

A dark force, unleashed online Jan 6, 2012. Published by *Boston Globe*
Covers our research on Crowdturfing Project.

Million Dollar Crowdturfing Industry Dupes Social Networks Dec. 13, 2011. Published by *Slashodot*
Summerizes our results in Crowdturfing Project.

Hidden Industry Dupes Social Media Users Dec. 12, 2011. Published by *Technology Review*
Covers our work about evil crowdsourcing systems (*i.e.* Crowdturfing Project)

Honors

Regents Special International Fellow, UCSB 2009 - 2010