Xia Zhou

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Education

University of California, Santa Barbara — California, U.S.A.
Ph.D. in Computer Science (Expected) — 2007 - Present

Peking University — Beijing, China
M.S. in Computer Science — 2004 - 2007

Wuhan University — Wuhan, China
B.E. in Computer Science & Technology — 2000 - 2004
GPA (Major): 91.6/100; RANK: 1st/726

Honors & Awards

- **Outstanding Publication Award in Computer Science**, UCSB 2009
- **US Anita Borg Scholarship Finalist**, U.S.A. 2009
- **Best Paper Award Finalist**, MobiCom 2008
- **Chancellor's Fellowship**, UCSB 2007

Publications

Xia Zhou, and Heather Zheng. "TRUST: A General Framework for Truthful Double Spectrum Auctions". *In the Proceedings of the 28th IEEE International Conference on Computer Communications (INFOCOM)*, Rio de Janeiro, Brazil, April, 2009. (**Outstanding publication award in Computer Science**, UCSB)

Xia Zhou, Sorabh Gandhi, Subhash Suri and Haitao Zheng. "eBay in the Sky: Strategy-Proof Wireless Spectrum Auctions". *In the ACM Annual International Conference on Mobile Computing and Networking (MobiCom)*, San Francisco, CA, September, 2008. **(Nominated for best paper award)**

Xia Zhou, Shravan Mettu, Heather Zheng, and Elizabeth M. Belding. "Traffic-Driven Dynamic Spectrum Auctions". *In the Proceedings of IEEE Workshop on Networking Technologies for Software Defined Radio Networks (WSDR)*, San Francisco, CA, June, 2008.

Xia Zhou, Jun Zhao, and Guanghua Yang. "Correlation based Rate Adaptation via Insights from Incomplete Observations in 802.11 Networks". *In The IEEE International Conference on Communications (ICC)*, June, 2007.

Zhen Cao, **Xia Zhou**, Maoxing Xu, Zhong Chen, Jianbin Hu and Liyong Tang. "Enhancing Base Station Security against DoS Attacks in Wireless Sensor Networks". *In The IEEE International Conference on Wireless Communications, Networking and Mobile Computing (WiCOM)*, September, 2006.

Zhen Cao, Jianbin Hu, Zhong Chen, Maoxing Xu, and **Xia Zhou**. "Feedback: Towards Dynamic Behavior and Secure Routing for Wireless Sensor Networks". *In Proc. of In-*

ternational Conference on Advanced Information Networking and Application (AINA), vol. 2, pp. 160-164, April, 2006.

Research Experience

Research Assistant — 09/2007 – Present,
Intelligent Networking Lab — UCSB, U.S.A

Projects: **Dynamic Spectrum Auctions: Systems and Algorithms**

Description: Spectrum is not free in many cases and can be trade between networks/players. We propose to use short-term dynamic spectrum auctions to distribute spectrum driven by dynamic user demand and willingness-to-pay. Our goal is to develop *efficient, real-time*(eBay-like) and *economic-robust* spectrum auction and trading systems. The challenges include (1) how to clear auctions in real-time while addressing interference constraints, (2) how to achieve economic-robustness and prevent market manipulations while addressing interference constraints, and (3) how to maintain spectrum efficiency. We have developed truthful auction designs which enable spectrum reuse in both single-sided and double auctions. In single-sided auctions, a seller auctions its spectrum to many smaller players; while in double auctions, multiple sellers and buyers trade spectrum using auctions. Our truthful designs discourage bidders from manipulating their bids because doing so does not lead to any gain. We also examined the impact of auctions on network performance. In addition, We have designed collusion-resistant spectrum auction to combat bidder collusion and evaluated the tradeoff between economic-robustness and auction revenue.

Research Intern — 03/2006 – 10/2006,
Microsoft Research Asia — Beijing, China

Projects: **Rate Adaptation in 802.11 Wireless Networks**

Description: Our project addresses the rate adaptation problem in the context of nascent 802.11n standard. We propose to adapt data rate from the correlation perspective, and have developed Correlation based Rate Adaptation (CORA). CORA splits rate into more atomic components and adjusts them according to the correlation between rate adaptation actions and transmission results. Since CORA is designed in the context of IEEE 802.11n, we have developed a physical layer simulator and a NS2 simulator in the 802.11n context to evaluate CORA's performance.

Research Assistant — 03/2005 – 07/2007,
Network and Information Security Lab — Peking University, China

Projects:
(1) Feedback based Secure Routing (FBSR)
(2) Reputation based Client Puzzle Scheme for WSN
(3) Blacklist aided False Data Filtering Scheme for WSN (BSEF)

Description: We are working on routing protocol design and routing security in WSN. In the first project, we have developed FBSR which improves opportunistic routing by utilizing feedbacks from both neighbor nodes and base station. Feedback from neighbors is used for incorporating energy into routing metric due to the resource-constraint of sensor networks, while feedback from base station is exploited for guaranteeing routing security.

In the second project, we have designed a reputation based client puzzle scheme and a security framework to enhance the security of base station. The puzzle's difficulty is adapted according to sensor node's reputation. In this way, malicious nodes are punished without introducing too much burden on normal nodes. In the third project, we proposed a Blacklist aided Statistical Enroute Filtering (BSEF) scheme of false data filtering in WSN. Therefore, false data are filtered at node level instead of checking data content of each packet leading to more efficient filtering of false data.

Research Assistant 04/2003 – 12/2003,
State Key Lab of Software Engineering Wuhan University, China

Projects Personalized Virtual System on Library Management

Description Designed a system to simulate scenarios in a library and learn the personalities of users. The system can facilitate users using the library resources, enrich user's experience, and intelligently infer user's interests and preferences from historical records.

Working Experience

Teaching Assistant (09/2008 – 06/2009) *UC Santa Barbara, U.S.A.*

Courses
(1) Graduate Networking (Fall 2008)
(2) Cognitive Wireless Networking (Winter 2009)
(3) Advanced Topics in Networking (Spring 2009)

Teaching Assistant (2005 - 2007) *Peking University, China*

Courses
(1) Data Structure and Algorithms (Spring 2005)
- For students from Medical School and City Environment School
(2) Data Structure and Algorithms (Fall 2006)

Internship (02/2004 – 05/2004) *Guangtong, Inc., China*

Projects Develop a network gaming platform, which is part of my bachelor thesis project.