

## Guor-Huar Lu

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### Education

Ph.D. Electrical Engineering, University of Minnesota, Twin Cities, February 2008  
Thesis title: *Towards a Large Scale and Secure Identity-Based Framework for Future Networks*  
Advisor: Zhi-Li Zhang

M.S. Electrical Engineering, Columbia University, February 2001

B.Eng. Electronic and Communication Engineering, University of Bristol, U.K., June 1999

### Research Interests

My primary research interests lie in the design of service-oriented, manageable next-generation network architecture that is secure and allows easy integration with emerging networks. I am also interested in the design of robust, secure wireless networks such as mesh networks, ad-hoc networks and sensor networks.

### Professional Experience

Research Assistant in Computer Science 2003-present  
Advisor: Zhi-Li Zhang University of Minnesota

- Conduct research in the areas of wireless ad-hoc and mesh networks, peer-to-peer systems and overlay networks, and distributed secure system design.
- Develop a scalable and robust topology-aware id-based routing protocol. The protocol is based on Distributed Hash Tables (DHT) works across heterogeneous network environments.
- Develop *Wheel of Trust*, a secure framework for overlay-based applications and services. The framework is built based on DHT and identity-based encryption. A prototype is implemented in C and deployed on PlanetLab for evaluation.
- Develop *Vault*, a distributed scalable and secure binding service. Vault is implemented in C within the Wheel of Trust framework using a different authentication mechanism.
- Analyze roofnet trace data from MIT's roofnet network for use in wireless mesh network related projects, including a new routing metric for opportunistic forwarding, a new fault tolerant routing protocol and the classification of wireless links. Various scripts are developed using awk, perl and Matlab.
- Develop *HIGH-GRADE*, a scalable location lookup service for wireless ad-hoc networks. A uniform theoretical framework was also developed to analyze HIGH-GRADE and other location lookup services.

Software Development Intern May-August 2006  
VectorMax Media Corporation Minneapolis, MN

- Develop client web graphical user interface (GUI) for a video content management system using Javascript, JSP, HTML, CSS, and XML.
- Implement several webservices that interface the client GUI with the backbone database servers in the video content management system using Java and SQL.

Intern  
Institute of Information Science, Academia Sinica

Summer 1998 and Summer 2000  
Taipei, Taiwan

- Develop a network monitoring tool using C and Perl. The tool gathers traceroute data for analyzing and inferring network faults.
- Design web sites for storing historical documents about Taiwan using HTML and Photoshop.

### Technical Skills

- Languages: C/C++, C#, Java, HTML, Javascript, XML, CSS
- Applications: MATLAB, Network Simulator-2 (ns-2)
- Operating Systems: Unix/Linux, Windows.
- Miscellaneous: socket programming, software configuration management, strong verbal and written communication skills, excellent troubleshooting and debugging skills

### Journal and Conference Publications

1. Guor-Huar Lu and Zhi-Li Zhang. *Wheel of Trust: A Secure Framework for Overlay-based Services*. In IEEE ICC '07, Glasgow, UK, June 2007.
2. Guor-Huar Lu, Changho Choi, and Zhi-Li Zhang. *Vault: A Secure Binding Service*. In IEEE ICNP '06, Santa Barbara, CA, Nov 2006.
3. Zifei Zhong, Junling Wang, Srihari Nelakuditi, and Guor-Huar Lu. *On Selection of Candidates for Opportunistic Any-Path Forwarding*. In ACM Mobile Computing and Communications Review (MCCR), Volume 10, Issue 4, pp. 1 - 2, Oct. 2006.
4. Zifei Zhong, Junling Wang, Guor-Huar Lu, and Srihari Nelakuditi. *On Selection of Candidates for Opportunistic Any-Path Forwarding*. In ACM MobiCom '05, Sept. 2005. (Poster)
5. Srihari Nelakuditi, Sanghwan Lee, Yinzhe Yu, Junling Wang, Zifei Zhong, Guor-Huar Lu, Zhi-Li Zhang. *Blacklist-Aided Forwarding in Static Multihop Wireless Networks*. In IEEE SECON '05, Santa Clara, CA, Sept. 2005.
6. Yunqian Ma, Yinzhe Yu, Guor-Huar Lu, and Zhi-Li Zhang. *Improving Wireless Link Delivery Ratio Classification with Packet SNR*. In IEEE Electro Information Technology (EIT 2005). Lincoln, NE, May 2005.
7. Yinzhe Yu, Guor-Huar Lu, and Zhi-Li Zhang. *Enhancing Location Service Scalability with HIGH-GRADE*. In IEEE MASS '04, Fort Lauderdale, FL, Oct. 2004.
8. Hung-Yu Wei, Guor-Huar Lu, and Wai Chen. *Mobile User Locating Mechanism Based on Network Latency*. In IEEE VTC Fall '01, Oct. 2001.

### Workshop Publications and Standard Contribution

9. Yinzhe Yu, Guor-Huar Lu, and Zhi-Li Zhang. *Location Service in Ad-Hoc Networks: Modeling and Analysis*. International Workshop on Theoretical Aspects of Wireless Ad hoc, Sensor and Peer-to-Peer Networks, Chicago, IL, June 2004.
10. Andy Nix, Guor-Huar Lu, and Tim Harrold. *Hiperlan/MSS Spectrum Sharing: Measurements and Simulation of Building Shielding Loss at 5 GHz*. Standard contribution to ESTI BRAN, FL, USA, 1999.

### Technical Reports

11. Guor-Huar Lu, Changho Choi, and Zhi-Li Zhang. *Vault: A Secure Binding Service*. University of Minnesota, Computer Science and Engineering Department, Technical Report 06-029
12. Yinzhe Yu, Guor-Huar Lu, and Zhi-Li Zhang. *Enhancing Location Service Scalability with HIGH-GRADE*. University of Minnesota, Computer Science and Engineering Department, Technical Report 04-002

## References

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and Computer Engineering  
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