

Dr. Guan-Hua (Scott) Tu

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Research Interests

Computer and network security, wireless and mobile systems

Work Experience

- Assistant Professor, Michigan State University *2016 - present*
- Postdoctoral Scholar, University of California, Los Angeles *2015 - 2016*
- Graduate Research Assistant, University of California, Los Angeles *2011 - 2015*
- Senior Software Engineer/Project Manager, MediaTek Inc. *2003 - 2009*
- Research Assistant, National Taiwan University *2001 - 2003*

Education

- Ph.D. in Computer Science, University of California, Los Angeles *Sep. 2015*
(Awardee of UCLA Dissertation Year Fellowship)
- M.S. in Computer Science, University of California, Los Angeles *Mar. 2013*
- M.S.E in Computer Science and Engineering, National Taiwan University *Jun. 2003*
- B.S.E in Computer Science and Engineering, National Central University *Jun. 2001*

Teaching Experience

- CSE 422, Computer Networks, Michigan State University, Spring 2017
- CS 118, Computer Network Fundamentals, University of California, Los Angeles, Fall 2015
- CS 170A: Mathematical Modeling and Methods for Computer Science, University of California, Los Angeles, Spring 2013
- CS M151B, Computer System Architecture, University of California, Los Angeles, Winter 2013
- CS 211: Network Protocol and Systems Software Design for Wireless and Mobile, University of California, Los Angeles, Fall 2012 and Fall 2013
- Information System by Unified Modeling Language, National Taiwan University, 2003
- Personal Communication System, National Taiwan University, 2002

Honors and Awards

- UCLA Dissertation Year Fellowship, 2015
- IBM PhD Fellowship, 2014
- UCLA Graduate Fellowship, 2012 and 2013
- Travel Grant, ACM MOBISYS 2013 and MOBICOM 2013
- Championship of Mobile Hero Wireless Communication Software Contest (318 competitors, won \$30,000 USD), Ministry of Economic Affairs Industrial Development Bureau, Taiwan, 2002
- Scholarship, YongKang City of Government, Taiwan, 2000

Media Report

- [5]: [TheVerge'15](#), [RCSWirelessNews'15](#), [Techxina'15](#), [NewsUnited'15](#).
[12]: [MIT Technology Review'12](#), [Computer World'12](#), [Fiscal Times'12](#), [TheVerge'12](#).

Publications

1. Guan-Hua Tu, Chi-Yu Li, Chunyi Peng, Yuanjie Li, Songwu Lu, *New Security Threats Caused by IMS-based SMS Service in 4G LTE Networks*, **ACM CCS 2016 (acceptance rate:137/837=16.4%)**.
2. Guan-Hua Tu, Yuanjie Li, Chunyi Peng, Chi-Yu Li, Songwu Lu, *Detecting Problematic Control-Plane Protocol Interactions in Mobile Networks*, **IEEE/ACM Transactions of Networking, 2016**.
3. Guan-Hua Tu, Chi-Yu Li, Chunyi Peng, Zengwen Yuan, Yuanjie Li, Xiaohu Zhao, Songwu Lu, *VoLTE*: A Lightweight Voice Solution to 4G LTE Networks*, **ACM HotMobile 2016**.
4. Yuanjie Li, Haotian Deng, Chunyi Peng, Zengwen Yuan, Guan-Hua Tu, Jiayao Li and Songwu Lu, *iCellular: Device-Customized Cellular Network Access on Commodity Smartphones*, **USENIX NSDI, 2016 (acceptance rate:45/225=20%)**.
5. Chi-Yu Li*, Guan-Hua Tu* (*Co-Primary), Chunyi Peng, Zengwen Yuan, Yuanjie Li, Songwu Lu, Xinbing Wang. *Insecurity of Voice Solution VoLTE in LTE Mobile Networks*, **ACM CCS 2015 (acceptance rate:128/646=19.8%)**.
6. Guan-Hua Tu, Chi-Yu Li, Chunyi Peng, Songwu Lu. *How Voice Call Technology Poses Security Threats in 4G LTE Networks*, **IEEE Communication and Network Security (CNS) 2015 (acceptance rate:48/171=28%)**.
7. Guan-Hua Tu, Yuanjie Li, Chunyi Peng, Chi-Yu Li, Hongyi Wang, Songwu Lu, *Control-Plane Protocol Interactions in Cellular Networks*, **ACM SIGCOMM 2014 (acceptance rate:45/237=19.0%)**.
8. Chunyi Peng, Chi-Yu Li, Hongyi Wang, Guan-Hua Tu, Songwu Lu, *Real Threats to Your Data Bills: Security Loopholes and Defense in Mobile Data Charging*, **ACM CCS 2014 (acceptance rate:114/585=19.5%)**.
9. Guan-Hua Tu, Chunyi Peng, Hongyi Wang, Chi-Yu Li, Songwu Lu, *How Voice Calls Affect Data in Operational LTE Networks*, **ACM MOBICOM 2013 (acceptance rate:28/208=13.5%)**.
10. Guan-Hua Tu, Chunyi Peng, Chi-Yu Li, Xingyu Ma, Hongyi Wang, Tao Wang, Songwu Lu, *Accounting for Roaming Users on Mobile Data Access: Issues and Root Causes*, **ACM MOBISYS 2013 (acceptance rate:33/211=15.6%)**.
11. Shiqiang Wang, Guan-Hua Tu, Raghu Ganti, Ting He, Kin Leung, Howard Tripp, Katy Warr, Murtaza Zafer, *Mobile Micro-Cloud: Application Classification, Mapping, and Deployment*, AMITA 2013.
12. Chunyi Peng*,Guan-Hua Tu* (*Co-Primary), Chi-Yu Li, Songwu Lu, *Can We Pay for What We Get in 3G Data Access?*, **ACM MOBICOM 2012 (acceptance rate: 32/212 = 15.1%)**.
13. Chunyi Peng, Chi-Yu Li, Guan-Hua Tu, Songwu Lu, Lixia Zhang, *Mobile Data Charging: New Attacks and Countermeasures*, **ACM CCS 2012 (acceptance rate:80/423=18.9%)**.
14. Phone Lin, Guan-Hua Tu, *An Improved GGSN Failure Restoration Mechanism for UMTS*, *ACM/Springer Wireless Networks*, 12(1):91-103, February 2006.
15. S.-M. Cheng, Phone Lin, Guan-Hua Tu, L.-C. Fu, and C.-F. Liang, *An Intelligent GGSN Dispatching Mechanism for UMTS*, Elsevier **Computer Communications**, 28(8): 947-955, May 2005.
16. Guan-Hua Tu, C.-H Gan, Y.-S Shen, Phone Lin, L.-C Fu, *The intelligent GGSN Dispatching Mechanism for GPRS/UMTS networks*, *Bulletin of the College of Engineering, National Taiwan University*, No.9, p49-56, February 2004.

17. S.-M Cheng, C.-H Gan, Phone Lin, Guan-Hua Tu, *Key Issues and Technologies for UMTS High Speed Downlink Packet Access*, Bulletin of the College of Engineering, National Taiwan University, No.9, p57-63, February 2004.

Book Chapter

18. Guan-Hua Tu, *Short Message Service Programming for Wireless Internet* Chapters 3 and 4, Functionalities of Short Message Service Gateway, ISBN:957-8675-83-6, February 2002.

US Patents

19. Anku Jain, Amit Kumar, Guan-Hua Tu, *Mobile communication apparatus having anti-theft and auto-notification functions*, US. Patent, Patent Number: [US9160830](#), October 2015, **(Granted)**
20. Guan-Hua Tu, *Mobile communication apparatus having anti-theft and auto-notification functions*, US. Patent, Patent Number: [US7574235](#), August 2009, **(Granted)**
21. Guan-Hua Tu, *Method and system for serverless VOIP service in personal communication network*, US. Patent, Patent Number: [US7519075](#), April 2009, **(Granted)**
22. Guan-Hua Tu, J.-C Wang, *Method and mobile apparatus of receiving a multimedia message*, US Patent, Patent number: [US7835758](#), May 2006, **(Granted)**
23. Phone Lin, Y.-B. Lin, Guan-Hua Tu, and R.-G Cheng, *An Overflow Control Mechanism for Frame Synchronization of Base Station in Wireless Communication Systems*, US. Patent, Patent Number: [US7359356](#), August 2008, **(Granted)**
24. Guan-Hua Tu, Wei-Hsuan Lien, *Communication device for wireless virtual storage and method thereof*, US patent application number: 20090132676, May 2009, under review
25. Jing-He Sun, Guan-Hua Tu, *Address resolution protocol (ARP) cache management and devices*, US patent application number: 20080101381, May 2008, under review
26. Anku Jain, Amit Kumar, Guan-Hua Tu, *Method of locating a mobile communication system for providing antitheft and data protection during successive boot-up procedure*, US patent application number: 20080014990, January 2008, under review
27. Jyh-Chun Wang, Guan-Hua Tu, *Method and wireless communication apparatus for transmitting and receiving contact information*, US patent application number: 20070266099, November 2007, under review
28. Chiu-Wan Li, Guan-Hua Tu, *System and method for processing multimedia messages*, US patent application number: 20070198731, August 2007, under review

Activities

Journal/Conference reviewers

- Reviewer for IEEE/ACM Transaction on Networking, 2013, 2015-2017
- Reviewer for WWW, 2017
- Reviewer for IEEE ICNP, 2016
- Reviewer for ACM MOBICOM, 2016
- Reviewer for IEEE Transactions on Mobile Computing, 2015-2016
- Reviewer for IEEE Wireless Network, 2012, 2015-2017
- Reviewer for IEEE INFOCOM, 2013, 2014, 2015
- Reviewer for IEEE Transactions on Vehicular Technology, 2015
- Reviewer for IEEE Transactions on Dependable and Secure Computing, 2015

- Reviewer for IEEE Wireless Communication Magazine, 2014
- Reviewer for IEEE Wireless Communications and Mobile Computing, 2013
- Reviewer for WiNMee, 2013

Public services

1. TPC member for IEEE VTC'17, IEEE DSC'17, ACM WearSys'17