

CHI-YU LI

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CURRENT EMPLOYMENT

Associate Professor, College of Computer Science, National Yang Ming Chiao Tung University

RESEARCH INTERESTS

Wireless Networking, Mobile Network and System, Network Security, UAV Networking

EDUCATION

University of California, Los Angeles *Mar. 2015*
Ph.D. in Computer Science
Advisor: Professor Songwu Lu

National Chiao Tung University *Jun. 2006*
M.S. in Computer Science and Engineering
Advisor: Professor Rong-Hong Jan

National Chiao Tung University *Jun. 2004*
B.S. in Computer and Information Science
B.S.M. in Management Science

HONORS AND AWARDS

Y. Z. Hsu Technology Invention Award *2022*

K. T. Li Cornerstone Award *2022*

MOST FutureTech Award *2021*
The joint UAV research project, which was led by Prof. Li-Chun Wang and where we built Mobile UAV Wi-Fi Base Station

MOST FutureTech Award *2021*
Technology: Security Vulnerability Detection and Attack Prevention for 4G/5G Multimedia Systems

MOST FutureTech Award (Best Popular Award) *2020*
Technology: A Transparent Deployment Solution for 4G/5G Edge Computing Platform

3-year MOST Grant for Excellent Young Scholar *2020*

Best Paper Award in Taiwan Telecom 2020 *2020*

Best Demo Award in Mobile Computing Workshop 2019 *2019*

Google Android Security Reward *2019*

Best Paper Award in IEEE CNS 2018 *2018*

Facebook Security Reward *2017*

3-year MOST Grant for Excellent Young Scholar *2017*

MTK Junior Chair Professor *2016*

WORK EXPERIENCE

Assistant Professor, Computer Science Department, NCTU	Aug. 2016 - Jul. 2020
Research Assistant, Computer Science Department, NCTU	Feb. 2016 - Jul. 2016
Postdoctoral Scholar, Computer Science Department, UCLA	Apr. 2015 - Dec. 2015

TEACHING EXPERIENCE

Queueing Theory <i>Computer Science Department, NCTU/NYCU</i>	2016, 2017, 2018, 2019, 2020, 2021
Protocol and System Design for Wireless Mobile Networks <i>Computer Science Department, NCTU</i>	2017, 2018, 2019
Computer Security Capstone <i>Computer Science Department, NCTU/NYCU</i>	2018, 2019, 2020, 2021, 2022
Mobile Network Security <i>Computer Science Department, NYCU</i>	2022

PROFESSIONAL SERVICE

Workshop co-chair, ACM WiNTECH	2021
Finance co-chair, APNOMS	2021
Tutorial co-chair, APNOMS	2020
Local arrangement co-chair, IEEE/IFIP NOMS	2018
Workshop chair, IEEE DSC	2017

PUBLICATIONS

Highlights

1. 980 citations; h-index: 17; i10-index: 27, May 2022 from Google Scholar
2. More than 55 international journal conference papers
3. 15 journals papers: 13 published in Q1 journals
4. 42 conference papers: 15 published in top networking/security conferences

Journal Papers (15)

1. Yan-Wei Chen, Chi-Yu Li, Chien-Chao Tseng, Min-Zhi Hu.
P4-TINS: P4-driven Traffic Isolation for Network Slicing with Bandwidth Guarantee and Management.
IEEE Transactions on Network and Service Management (TNSM), Early Access, 2022.
2. Yu-Hsuan Wu, Chi-Yu Li, Yi-Bing Lin, Kuochen Wang, Meng-Shou Wu.
Modeling Control Delays for Edge-enabled UAVs in Cellular Networks.
IEEE Internet of Things Journal (IoT-J), Early Access, 2022.
3. Tian Xie, Sihan Wang, Xinyu Lei, Jingwen Shi, Guan-Hua Tu, Chi-Yu Li.
MPKIX: Towards More Accountable and Secure Internet Application Services via Mobile Networked Systems.
IEEE Transactions on Mobile Computing (TMC), Early Access, 2022.

4. Chi-Yu Li, Hsin-Yi Wang, Wei-Ching Wang, Chun-Ying Huang.
Privacy Leakage and Protection of InputConnection Interface in Android.
IEEE Transactions on Network and Service Management (TNSM), Vol. 18, Issue 3, pp. 3309-3323, Sept. 2021.
5. Ying-Dar Lin, Widhi Yahya, Chien-Ting Wang, Chi-Yu Li, Jeans H. Tseng.
Scalable Mobile Edge Computing: A Two-tier Multi-site Multi-server Architecture with Autoscaling and Offloading.
IEEE Wireless Communications, Vol. 28, Issue 6, pp. 168-175, Dec. 2021.
6. Tian Xie, Guan-Hua Tu, Chi-Yu Li, Chunyi Peng.
How Can IoT Services Pose New Security Threats in Operational Cellular Networks?
IEEE Transactions on Mobile Computing (TMC), Vol. 20, Issue 8, pp. 2592-2606, Aug. 2021.
7. Ying-Dar Lin, Duc-Tai Truong, Asad Ali, Chi-Yu Li, Yuan-Cheng Lai, Thai-Mai Thi Dinh.
Proxy-based Federated Authentication: A Transparent Third-party Solution for Cloud-Edge Federation.
IEEE Network, Vol. 34, Issue 6, pp. 220-227, Nov. 2020.
8. Chi-Yu Li, Syuan-Cheng Chen, Chien-Ting Kuo, Chui-Hao Chiu.
Practical Machine Learning-based Rate Adaptation Solution for Wi-Fi NICs: IEEE 802.11ac as a Case Study.
IEEE Transactions on Vehicular Technology (TVT), Vol. 69, Issue 9, pp. 10264-10277, Sept. 2020.
9. Kai-Ten Feng, Li-Hsiang Shen, Chi-Yu Li, Po-Tsang Huang, Sau-Hsuan Wu, Li-Chun Wang, Yi-Bing Lin, Mau-Chung Frank Chang.
3D On-Demand Flying Mobile Communication for Millimeter Wave Heterogeneous Networks.
IEEE Network, Vol. 34, Issue 5, pp. 198-204, Sept. 2020.
10. Tian Xie, Guan-Hua Tu, Bangjie Yin, Chi-Yu Li, Chunyi Peng, Mi Zhang, Hui Liu, Xiaoming Liu.
The Untold Secrets of WiFi-Calling Services: Vulnerabilities, Attacks, and Countermeasures.
IEEE Transactions on Mobile Computing (TMC), Vol. 20, Issue 11, pp. 3131-3147, Nov. 2021.
11. Chi-Yu Li, Ying-Dar Lin, Yuan-Cheng Lai, Hsu-Tung Chien, Yu-Sheng Huang, Po-Hao Huang, Hsueh-Yang Liu.
Transparent AAA Security Design for Low-latency MEC-integrated Cellular Networks.
IEEE Transactions on Vehicular Technology (TVT), Vol. 69, Issue 3, pp. 3231-3243, Mar. 2020.
12. Chi-Yu Li, Chunyi Peng, Peng Cheng, Songwu Lu, Xinbing Wang, Fengyuan Ren, Tao Wang.
An Energy Efficiency Perspective on Rate Adaptation for 802.11n NIC.
IEEE Transactions on Mobile Computing (TMC), Vol. 15, Issue 6, pp. 1333-1347, Jun. 2016.
13. Guan-Hua Tu, Yuanjie Li, Chunyi Peng, Chi-Yu Li, Songwu Lu.
Detecting Problematic Control-Plane Protocol Interactions in Mobile Networks.
IEEE/ACM Transactions on Networking (ToN), Vol. 24, Issue 2, pp. 1209-1222, Apr. 2016.
14. Andy An-Kai Jeng, Rong-Hong Jan, Chi-Yu Li, Chien Chen.
Release-Time-Based Multi-Channel MAC Protocol for Wireless Mesh Networks.
Computer Networks, vol. 55, no. 9, p2176-2195, 2011.
15. Chi-Yu Li, An-Kai Jeng, Rong-Hong Jan.
A MAC Protocol for Multi-channel Multi-interface Wireless Mesh Network Using Hybrid Channel Assignment Scheme.
Journal of Information Science and Engineering, vol. 23, no. 4, p1041-1055, 2007.

1. Po-Hao Huang, Fu-Cheng Hsieh, Wen-Jen Hsieh, Chi-Yu Li, Ying-Dar Lin, "Prioritized Traffic Shaping for Low-latency MEC Flows in MEC-enabled Cellular Networks," *accepted by IEEE CCNC 2022*.
2. Yung-Chuan Wu, Hong-Rong Chang, Meng-Shou Wu, Chi-Yu Li, Kuochen Wang, "UAV-FAP: User Fairness-Driven Access Point on UAV for Wi-Fi Networks," *accepted by IEEE CCNC 2022*.
3. Meng-Shou Wu, Chi-Yu Li, "Edge-based Realtime Image Object Detection for UAV Missions," in *Proc. 30th Wireless and Optical Communications Conference (WOCC)*, Oct. 2021.
4. Sihan Wang, Guan-Hua Tu, Xinyu Lei, Tian Xie, Chi-Yu Li, Po-Yi Chou, Fucheng Hsieh, Yiwen Hu, Li Xiao, Chunyi Peng, "Insecurity of Operational Cellular IoT Service: New Vulnerabilities, Attacks, and Countermeasures," in *Proc. ACM Conference on Mobile Computing and Networking (ACM MobiCom 2021)*, Oct. 2021. [Top networking conference]
5. Syuan-Cheng Chen, Chi-Yu Li, Chui-Hao Chiu, "An Experience Driven Design for IEEE 802.11ac Rate Adaptation based on Reinforcement Learning," in *Proc. IEEE Conference on Computer Communications (IEEE INFOCOM 2021)*, May 2021. [Top networking conference]
6. Yiwen Hu, Sihan Wang, Guan-Hua Tu, Li Xiao, Tian Xie, Xinyu Lei, Chi-Yu Li, "Security Threats from Bitcoin Wallet Smartphone Applications: Vulnerabilities, Attacks, and Countermeasures," in *Proc. ACM Conference on Data and Application Security and Privacy (ACM CODASPY 2021)*, Apr. 2021.
7. Pei-Yuan Hong, Chi-Yu Li, Hong-Rong Chang, YuanHao Hsueh, Kuochen Wang, "WBF-PS: WiGig Beam Fingerprinting for UAV Positioning System in GPS-denied Environments," in *Proc. IEEE Conference on Computer Communications (IEEE INFOCOM 2020)*, Jul. 2020. [Top networking conference]
8. Asad Ali, Ying-Dar Lin, Chi-Yu Li, Yuan-Cheng Lai, "Transparent 3rd-Party Authentication with Application Mobility for 5G Mobile Edge Computing," in *Proc. European Conference on Networks and Communications (EuCNC 2020)*, Jun. 2020.
9. Xinyu Lei, Guan-Hua Tu, Chi-Yu Li, Tian Xie and Mi Zhang, "SecWIR: Securing Smart Home IoT Communications via Wi-Fi Routers with Embedded Intelligence," in *Proc. ACM Conference on Mobile Systems, Applications, and Services (ACM MobiSys 2020)*, Jun. 2020. [Top networking conference]
10. Yu-Han Lu, Chi-Yu Li, Yao-Yu Li, Sandy Hsin-Yu Hsiao, Tian Xie, Guan-Hua Tu, Wei-Xun Chen, "Ghost Calls from Operational 4G Call Systems: IMS Vulnerability, Call DoS Attack, and Countermeasure," in *Proc. ACM Conference on Mobile Computing and Networking (ACM MobiCom 2020)*, Apr. 2020. [Top networking conference]
11. Li-Chun Wang, Chuan-Chi Lai, Hong-Han Shuai, Hsin-Piao Lin, Chi-Yu Li, Teng-Hu Cheng, Chiun-Hsun Chen, "Communications and Networking Technologies for Intelligent Drone Cruisers," in *Proc. IEEE Global Communications Conference (IEEE GLOBECOM 2019) Workshops*, Dec. 2019.
12. Tian Xie, Sihan Wang, Guan-Hua Tu, Chi-Yu Li, Xinyu Lei, "Exploring the Insecurity of Google Account Registration Protocol via Model Checking," in *Proc. IEEE Symposium Series on Computational Intelligence (IEEE SSCI 2019)*, Dec. 2019.
13. Sandy Hsin-Yu Hsiao, Hong-Rong Chang, Yu-Han Lu, Chi-Yu Li, "Mobility Support for Networks on Trains Using Commercial Off-the-shelf Routers," in *Proc. Asia-Pacific Network Operations and Management Symposium (APNOMS 2019) Poster*, Sept. 2019.
14. Cheng-Hsu Lin, Chi-Yu Li, Kuochen Wang, "Setting Malicious Flow Entries Against SDN Operations: Attacks and Countermeasures," in *Proc. IEEE Conference on Dependable and Secure Computing (IEEE DSC 2018)*, Dec. 2018.
15. Yan-Ting Chen, Chi-Yu Li, Kuochen Wang, "A Fast Converging Mechanism for Load Balancing Among SDN Multiple Controllers," in *Proc. IEEE Symposium on Computers and Communications*

(*IEEE ISCC 2018*), Jul. 2018.

16. Damiano Rapone, Roberto Quasso, Shahzoob Bilal Chundrigar, Samer T Talat, Luca Cominardi, Antonio De la Oliva, Ping-Heng Kuo, Alain Mourad, Alessandro Colazzo, Giacomo Parmeggiani, Aitor Zabala Orive, Chenguang Lu, Chi-Yu Li, "An Integrated, Virtualized Joint Edge and Fog Computing System with Multi-rat Convergence," in *Proc. IEEE International Symposium on Broadband Multimedia Systems and Broadcasting (IEEE BMSB 2018)*, Jun. 2018.
17. Tian Xie, Guan-Hua Tu, Chi-Yu Li, Chunyi Peng, Jaiwei Li, Mi Zhang, "The Dark Side of Operational Wi-Fi Calling Services," in *Proc. IEEE Conference on Communications and Network Security (IEEE CNS 2018)*, Jun. 2018. [Best Paper Award]
18. Xinyu Lei, Guan-Hua Tu, Alex Liu, Chi-Yu Li, Tian Xie, "The Insecurity of Home Digital Voice Assistants-Vulnerabilities, Attacks and Countermeasures," in *Proc. IEEE Conference on Communications and Network Security (IEEE CNS 2018)*, June 2018.
19. Chi-Yu Li, Giovanni Salinas, Po-Hao Huang, Guan-Hua Tu, Guo-Huang Hsu, Tien-Yuan Hsieh, "V2PSense: Enabling Cellular-based V2P Collision Warning Service Through Mobile Sensing," in *Proc. IEEE International Conference on Communications (IEEE ICC 2018)*, Jun. 2018.
20. Tian Xie, Chi-Yu Li, Jiliang Tang, Guan-Hua Tu, "How Voice Service Threatens Cellular-connected IoT Devices in the Operational 4G LTE Networks," in *Proc. IEEE International Conference on Communications (IEEE ICC 2018)*, Jun. 2018.
21. Ping-Heng Kuo, Alain Mourad, Chenguang Lu, Miguel Berg, Simon Duquennoy, Ying-Yu Chen, Yi-Huai Hsu, Aitor Zabala, Riccardo Ferrari, Sergio Gonzalez, Chi-Yu Li, Hsu-Tung Chien, "An Integrated Edge and Fog System for Future Communication Networks," in *Proc. IEEE Wireless Communications and Networking Conference (IEEE WCNC 2018) Workshops*, Apr. 2018.
22. Chi-Yu Li, Hsueh-Yang Liu, Po-Hao Huang, Hsu-Tung Chien, Guan-Hua Tu, Pei-Yuan Hong, Ying-Dar Lin, "Mobile Edge Computing Platform Deployment in 4G LTE Networks: A Middlebox Approach," in *Proc. USENIX Workshop on Hot Topics in Edge Computing (USENIX HotEdge 2018)*, Jul. 2018.
23. Yao-Yu Li, Chi-Yu Li, Wei-Han Chen, Chia-Jui Yeh, Kuochen Wang, "Enabling Seamless WiGig/WiFi Handovers in Tri-band Wireless Systems," in *Proc. IEEE International Conference on Network Protocols (IEEE ICNP 2017) Demo*, Oct. 2017.
24. Guan-Rong Chen, Chi-Yu Li, Kuochen Wang, "ReSDN: A Lightweight Solution for Data-plane State Recovery in Software-defined Networks," in *Proc. IEEE International Conference on Communications (IEEE ICC 2017)*, Jun. 2017.
25. Guan-Hua Tu*, Chi-Yu Li* (*:Co-Primary), Chunyi Peng, Yuanjie Li, Songwu Lu, "New Security Threats Caused by IMS-based SMS Service in 4G LTE Networks," in *Proc. ACM Conference on Computer and Communications Security (ACM CCS 2016)*, Oct. 2016. [Top security conference]
26. Guan-Hua Tu*, Chi-Yu Li* (*:Co-Primary), Chunyi Peng, Zenwen Yuan, Yuanjie Li, Xiaohu Zhao, Songwu Lu, "VoLTE*: A Lightweight Voice Solution to 4G LTE Networks," in *Proc. ACM Workshops on Mobile Computing Systems and Applications (ACM HotMobile 2016)*, Feb. 2016.
27. Chi-Yu Li, Guan-Hua Tu, Chunyi Peng, Zengwen Yuan, Yuanjie Li, Songwu Lu, Xinbing Wang, "Insecurity of Voice Solution VoLTE in LTE Mobile Networks," in *Proc. ACM Conference on Computer and Communications Security (ACM CCS 2015)*, Oct. 2015. [Top security conference]
28. Guan-Hua Tu, Chi-Yu Li, Chunyi Peng, Songwu Lu, "How Voice Call Technology Poses Security Threats in 4G LTE Networks," in *Proc. IEEE Conference on Communications and Network Security (IEEE CNS 2015)*, Jun. 2015.
29. Chi-Yu Li, Chunyi Peng, Songwu Lu, Xinbing Wang, Ranveer Chandra, "Latency-Aware Rate Adaptation in 802.11n Home Networks," in *Proc. IEEE Conference on Computer Communications (IEEE INFOCOM 2015)*, Jul. 2015. [Top networking conference]

30. 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," in *Proc. ACM Conference on Computer and Communications Security (ACM CCS 2014)*, Oct. 2014. [Top security conference]
31. Guan-Hua Tu, Yuanjie Li, Chunyi Peng, Chi-Yu Li, Hongyi Wang, Songwu Lu, "Control-plane Protocol Interactions in Cellular Networks," in *Proc. ACM Special Interest Group on Data Communication (ACM SIGCOMM 2014)*, Aug. 2014. [Top networking conference]
32. Ioannis Pefkianakis, Chi-Yu Li, Chunyi Peng, Suk-Bok Lee, Songwu Lu, "CMES: Collaborative Energy Save for MIMO 802.11 Wireless Networks," in *Proc. IEEE International Conference on Network Protocols (IEEE ICNP 2013)*, Oct. 2013.
33. Guan-Hua Tu, Chunyi Peng, Hongyi Wang, Chi-Yu Li, Songwu Lu, "How Voice Calls Affect Data in Operational LTE Networks," in *Proc. ACM Conference on Mobile Computing and Networking (ACM MobiCom 2013)*, Aug. 2013. [Top networking conference]
34. Guan-Hua Tu, Chunyi Peng, Chi-Yu Li, Xingyu Ma, Songwu Lu, "Accounting for Roaming Users on Mobile Data Access: Issues and Root Causes," in *Proc. ACM Conference on Mobile Systems, Applications, and Services (ACM MobiSys 2013)*, Jun. 2013. [Top networking conference]
35. Chi-Yu Li, Chunyi Peng, Songwu Lu, Xinbing Wang, "Energy-based Rate Adaptation for 802.11n," in *Proc. ACM Conference on Mobile Computing and Networking (ACM MobiCom 2012)*, Aug. 2012. [Top networking conference]
36. Chunyi Peng, Chi-Yu Li, Guan-Hua Tu, Songwu Lu, Lixia Zhang, "Mobile Data Charging: New Attacks and Countermeasures," in *Proc. ACM Conference on Computer and Communications Security (ACM CCS 2012)*, Oct. 2012. [Top security conference]
37. Chunyi Peng, Guan-Hua Tu, Chi-Yu Li, Songwu Lu, "Can We Pay for What We Get in 3G Data Access?" in *Proc. ACM Conference on Mobile Computing and Networking (ACM MobiCom 2012)*, Aug. 2012. [Top networking conference]
38. Chi-Yu Li, Ioannis Pefkianakis, Bojie Li, Chenghui Peng, Wei Zhang, Songwu Lu, "A Multimedia Service Migration Protocol for Single User Multiple Devices," in *Proc. IEEE International Conference on Communications (IEEE ICC 2012)*, May 2012.
39. Chi-Yu Li, Ioannis Pefkianakis, Bojie Li, Chenghui Peng, Wei Zhang, Songwu Lu, "A TCP Service Migration Protocol for Single User Multiple Devices," in *Proc. IARIA Conference on Mobile Ubiquitous Computing, Systems, Services and Technologies (IARIA UBIComm 2011)*, Nov. 2011.
40. Ioannis Pefkianakis, Chi-Yu Li, Songwu Lu, "What is Wrong/Right with IEEE 802.11n Spatial Multiplexing Power Save Feature?" in *Proc. IEEE International Conference on Network Protocols (IEEE ICNP 2011)*, Oct. 2011.
41. Jiangzhe Wang, Chunyi Peng, Chi-Yu Li, Eric Osterweil, Ryuji Wakikawa, Pei-Chun Cheng, Lixia, "Implementing Instant Messaging Using Named Data," in *Proc. Asian Internet Engineering Conference (AINTEC 2010)*, Nov. 2010.
42. Chi-Yu Li, An-Kai Jeng, Rong-Hong Jan, "A Medium Access Control Protocol for Multi-channel Multi-interface Wireless Mesh Network," in *Proc. Wireless, Ad Hoc and Sensor Networks (WASN 2006)*, Aug. 2006.

Ph.D. Dissertation

1. Chi-Yu Li.
Toward Customizable Wi-Fi.
Ph.D. Dissertation in Computer Science, University of California, Los Angeles, 2015.