Hanchao Yang

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Summary

- Extensive experience in computer network securing, with solid programming skills in variety of languages
- Broad knowledge in cryptography algorithm, with practice from frontend to backend
- Well-trained research ability, with publications in high citations and top tire security conference

Education

Virginia Tech Blacksburg, VA
Ph.D. in Electrical Engineering, in Networking, Advisor: Prof. Yaling Yang *Aug.2019 – May.2024 (expected)*

University of Electronics Science and Technology of China Chengdu, China
B.Eng. in Electrical Engineering, in Microelectronic Advisor: Prof. Yong Deng *Aug.2015 – Jun.2019*

Technical Skills

Programming: Python/MATLAB (proficient), C/C++/Java/JavaScript (Skillful)
Tools & Frameworks: React Native, Selenium, PyTorch, Node.js, Git, SQL, GNURadio

Experience

Graduate Research Assistant Aug 2019 – Present
Virginia Tech *Blacksburg, VA*

Robust GPS Spoofing Detection

- Designed a GPS spoofing detection system working on off-the-shelf devices (smartphones), instead of devices with antenna array in thousands of dollar, achieving **over 95%** detection accuracy in 10 seconds.
- Built an Android data collection app (Java) and an detection algorithms (Matlab).
- A refined GPS spoofer (C) with a cloud-sourcing decision scheme to provide a non perceived anti-spoofing service, which is submitted to a top journal.

Privacy-Friendly Digital Contact Tracing System

- Proposed a **digital contact tracing** system utilizing homomorphic encryption, k-anonymity, multi-party computation etc, to protect sensitive information from servers and other users.
- Built an **Android app** with Reactive Native and a **backend server** using Firebase.

NB-IoT and 5G NR Secure Transmission

- Built anti interference and interpreting schemes for Lockheed Martin, which compatible with 3GPP standard.
- The system simulation shows **30 times** resistant to jamming and **6 times** lower to interpreting.

Reseach Assistant Jul.2017 – June.2019
University of Electronics Science and Technology of China *Chengdu, China*

Physarum Based Network Optimization

- Network optimization schemes utilizing on fuzzy mathematics, user equilibrium and physarum algorithm
- Three publications, all first author, cited in a fair number.

Publications

- Liu, Shinan, Hanchao Yang, et al. "Stars Can Tell: A Robust Method to Defend against GPS Spoofing Attacks using Off-the-shelf Chipset." In 30th USENIX USENIX Security 21 (2021).
- Cheng, Xiang, Hanchao Yang, Archanaa S. Krishnan, Patrick Schaumont, and Yaling Yang. "KHOVID: interoperable privacy preserving digital contact tracing." arXiv preprint arXiv:2012.09375 (2020).
- Yang, Hanchao, Qian Wan, and Yong Deng. "A bio-inspired optimal network division method." Physica A: Statistical Mechanics and its Applications 527 (2019).
- Yang, Hanchao, Richard Mayne, and Yong Deng. "A Bio-inspired Network Design Method for Intelligent Transportation." International Journal of Unconventional Computing 14 (2019).
- Yang, Hanchao, Yong Deng, and Jeff Jones. "Network Division Method Based on Cellular Growth and Physarum-inspired Network Adaptation." International Journal of Unconventional Computing 13.6 (2017).