ZESEN ZHANG

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EDUCATION

University of California, San Diego *Sep 2019 - Present*
Ph.D. in Computer Science and Engineeering, SysNet Group
Supervisor: Prof. Aaron Schulman

Shanghai Jiao Tong University *Sep 2015 - June 2019*
Zhiyuan Honors Program of Engineering (Highly Seletive: **Top 5%)**, School of Cyber Security
SJTU Outstanding Undergraduate student
B.S in Information Security, **Double major** in Accounting
Supervisor: Prof. Xinbing Wang, Prof. Luoyi Fu

PUBLICATIONS

[1] **Zesen Zhang**, Alexander Marder, Ricky Mok, Bradley Huffaker, Matthew Luckie, k claffy, Aaron Schulman, "Inferring Regional Access Network Topologies: Methods and Applications" accepted by *Internet Measurement Conference 2021. (IMC)*

[2] Xiaoying Gan, **Zesen Zhang**, Luoyi Fu, Xinbing Wang "Unraveling Impact of Critical Sensing Range on Mobile Camera Sensor Networks" accepted by *the Transactions on Mobile Computing.*

[3] Fu, Luoyi; Fu, Xinzhe; **Zhang, Zesen;** Xu, Zhiying; Wu, Xudong; Wang, Xinbing; Lu, Songwu,"Joint Optimization of Multicast Energy in Delay-constrained Mobile Wireless Networks" accepted by the *IEEE/ACM Transactions on Networking.*

PROJECTS

How far are we from our speed test servers? *Sep 2021 - Oct 2021*
- Description: Analyze both geolocation distance and topological distance of Speed test servers from users
- Select speed test servers from Ookla, Comcast, M-Lab, AWS, Azure, Google Cloud, Netflix, Cloudflare.
- Discuss the performance measurement effects brought by regional access network architecture.
- Paper submitted to Passive and Active Measurement Conference 2022

Access Denied: Assessing Physical Risks to Internet Access Networks *Dec 2020 - Oct 2021*
- Description: Study the root cause and impact of real-world large access network outages.
- Analyze identify threats in AT&T, Spectrum and Comcast regional access networks.
- Show the feasibility of a targeted attack without requiring insider information. Reveal the possibility of figuring out the physical central office building through network topology and the hints in DNS name.
- Explore potential ways to mitigate the risks. We review five examples of risk to regional network deployments, possible mitigations, and the trade-offs of undertaking such mitigations.
- Paper submitted to USENIX Security 2022

Chuntsung Programme *Mar 2018 - Mar 2019*
- The Percolation of Rumor In the Evolving Social Network
- Description: This study showed the critical scale of "seed" that we needed to percolate the influence to the whole network which is evloving.
- Used the reduction method to prove that finding the critical scale of "seed" to diffuse to the whole network in the general evolving network is an N-P hard problem.
- Applied the Markov process to portray the evolving process under the preferential attachment (PA) model and the Erdos-Renyi (ER) model which can form each step recursively. Then, applied the Taylor formula, the Stirling formula and the Azuma's inequality to prove that ln n (n is the number of vertexes in the network) seed is the only influence to the whole network.
- Verified the results of theoretical deduction in large-scale academic network.

TECHNICAL STRENGTHS

C/C++, Python, Java, html, Verilog, VHDL, MATLAB, LaTeX, Multisim, Office