Morteza Shoushtari

Ph.D. in Electrical and Computer Engineering
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Summary

I completed my Ph.D. in Electrical and Computer Engineering at Brigham Young University (BYU) in 2023, specializing in physical layer security and error correction coding in wireless communications. Prior to pursuing my Ph.D., I gained five years of work experience in the tech industry, working as an IT administrator at Huawei Technologies Co., and as a network engineer at JYANE Construction Co. and Persia Cloud Co.

Interests

- Wired/Wireless/Cellular Networking
- Network Security (Cryptography, Post-Quantum Cryptosystems, Physical Layer Security)
- Cloud Computing
- Error-Correction Coding (Turbo, Polar, LDPC, and Viterbi algorithm)

Education

Ph.D., in Electrical and Computer Engineering (ECE),
Brigham Young University, Utah, USA
Dissertation title: "Securing Wireless Communication via Information-Theoretic Approaches: Innovative Schemes and Code Design Techniques."

- Years: 2019 - 2023
- GPA: 3.78/4

M.Sc., Information Technology (IT),
Shiraz University, Shiraz, IRAN

- Years: 2011 - 2013

B.Sc., Computer Engineering (CE),
Sadjad University of Technology, Mashhad, IRAN

- Years: 2006 - 2010

Skills

- Comprehensive understanding of wired/wireless/cellular communications, protocols, and procedures.
- Hands-on experience on network device configuration.
- Extensive knowledge of network security, cryptographic algorithms, and Physical Layer Security.
- Familiarity with cloud computing technologies and procedures (AWS, GCP).
- Proficient in researching and solving problems innovatively.
- Strong ability to work both in a team and independently.

Work Experiences

Brigham Young University, UTAH, USA **Jan 2019 - July 2023**
Graduate Research Assistant

- Discovered new properties of secret error-correcting coding (SECC) from the perspectives of information and coding theory.
- Devised a high-speed algorithm to construct the optimal code in Nested Linear Secrecy Codes, enhancing code identification and selection efficiency.
- Conducted a detailed assessment and visualized secrecy problems such as eavesdropping in aeronautical mobile telemetry communication and suggested the use of secrecy coding and specialized version of post-quantum cryptosystems for this type of communication systems.

IT Dep. HUAWEI Company, Tehran, Iran **Aug 2016 - Aug 2017**
IT Administrator

- Managed communication networks, monitored network performance and resolved any technical issues that arose.
- Provided first-level support to more than 250 employees.
- Performed installations and configurations of various network devices such as switches, wireless access points, cameras, and video conferencing systems.

IT Dep. JYAN Company, Tehran, Iran **Jan 2016 - Aug 2016**
Network Engineer

- Managed communication networks, monitored network performance and resolved any technical issues that arose.
- Delivered first-level support to more than 180 employees.
- Performed installations and configurations of various network devices such as switches, wireless access points, cameras, and video conferencing systems.

IT Dep. Persia Cloud Company, Tehran, Iran **Jun 2015 - Jan 2016**
Network Engineer

- Administered IAAS and PAAS layer of the company's cloud platforms (2X, IIRAS).
- Managed the company's Microsoft application servers (CRM, SharePoint, Lync).

Selected Publication

- "Optimizing Finite Blocklength Nested Linear Codes: Using the Worst Code to Find the Best Code", in Proc. Entropy Journal, MDPI, 2023.
- "Towards Practical Physical-Layer Security: Channel Measurements and Pedestrian Traffic", under review in Proc. IEEE Transactions on Information Theory, 2023.
- "Classification of Coset Codes for Wiretap Channels", under review in Proc. IEEE Transactions on Information Theory, 2023.
- "From Privacy Protection to Analyzing Users' Behavior: The Crucial Role of Information Theory in the Metaverse", IEEE Inter-mountain Engineering, Technology, and Computing Conference, 2023.
- "Secrecy Coding for the Binary Symmetric Wiretap Channel via Linear Programming", under review in Proc. IEEE Transactions on Information Forensics and Security, 2023.
- "A Comparative Study of Waveforms Across Mobile Cellular Generations: From 0G to 5G and Beyond", under review in Proc. IEEE Access, 2023.
- "Post-Quantum Cryptography Based on Codes: A Game Changer for Secrecy in Aeronautical Mobile Telemetry" in Proc. of the International Telemetry Conference (ITC), Las Vegas, NV, US, Oct. 2022.
- "Secrecy coding in the Integrated Network Enhanced Telemetry (iNET)" in Proc. of the International Telemetry Conference (ITC), Las Vegas, NV, US, Oct. 2021.
- "New Dual Relationships for Error-Correcting Wiretap Codes" in Proc. of IEEE Information Theory Workshop (ITW), Kanazawa, Japan, Oct. 2021.
- "On Caching with Finite Blocklength Coding for Secrecy over the Binary Erasure Wiretap Channel" in Proc. of IEEE Wireless Telecommunications Symposium (WTS), San Francisco, US, Apr. 2021.

Awards and Honors

- Third place award, IEEE Intermountain Engineering, Technology, and Computing Conference (IEEE i-ETC), 2023.
- Best paper award, International Telemetry Conference, 2022.
- Second best graduate student paper award, International Telemetry Conference, 2021.
- Member of IEEE Communication Society (ComSoc).

- Member of IEEE Information Theory Society (ITSoc).
- Outstanding IT engineer in Huawei Technologies Company, 2017.

Certificates and Other Skills

- Network certificate:
  - o CompTIA A+
  - o Network+
  - o CCNA (Cisco Certified Network Associate)
  - o MCITP (Microsoft Certified IT Professional)
  - o HCNA (Huawei Certified Network Associate)
- Knowledgeable about:
  - o Cellular protocol stack (control plane, data plane, NAS/RRC/PDCP/RLC/MAC/PHY)
  - o 5G and LTE features
  - o Wired/Wireless network architecture, infrastructure, and protocols
  - o Cloud Computing (AWS, Google Cloud)
  - o Routing and switching protocols (BGP, EIGRP, OSPF, RIP, IS-IS, MPLS)
  - o Network monitoring and troubleshooting
  - o Hands-on experience in network device configuration (switches, APs, etc.)
  - o IoT protocols and features.
  - o Network analyzer tools (Wireshark, SolarWinds)
  - o Security concepts (cryptosystems, attacks, vulnerabilities, standards)
  - o Programming languages such as C++/Matlab
  - o Windows server administration
  - o Network documentation and reporting
- Other skills:
  - o Highly detailed-oriented
  - o Innovative problem-solving abilities

References

Available upon request.