Pedram Kheirkhah Sangdeh

Lansing, MI | sangdeh@msu.edu | +1 (502)-599-1533 | https://pksangdeh.github.io

SUMMARY

- Ph.D. student in computer science, skilled in wireless networking, signal processing, and machine learning.
- Interested in design, implementation, and performance analysis of innovative protocols for 5G and beyond.
- Published a book chapter and 14 research papers in TON, INFOCOM, MobiHoc, TCOM, IoTJ, ICNP, etc.
- Prototyped two real-time solutions for blind spectrum sharing and WiFi-LTE coexistence.

EDUCATION

Ph.D. in Computer Science	*Michigan Sate University (MSU)*	2020 - Present
Ph.D. in Electrical and Electronics Engineering	*University of Louisville (**Transferred to MSU**)*	2017 - 2020
M.Sc. in Electrical Engineering	*University of Tehran*	2011 - 2014
B.Sc. in Electrical Engineering	*Iran University of Science and Technology*	2006 - 2011

RESEARCH INTERESTS

• Wireless Networking • Signal Processing • Information Theory • Machine Learning • Data science

TECHNICAL SKILLS

- **Technologies and Standards**:
  o Wi-Fi (802.11 ac/ax/be) o 5G NR o LTE o Vehicular Communications (802.11p) o IoT o DSRC
- **Platforms and Packages**:
  o C++ o Python o MATLAB o PyTorch o TensorFlow o GNU Radio o CVX o Gurobi o CPLEX

HONORS & AWARDS

- One of the 21 recipients of NSF travel grant for participating MMW2019, Salt lake City, Utah, 2019.
- Fellowship award from J. B. Speed School of Engineering at the University of Louisville, 2017.
- Nomination for best paper award in computer science, Iranian Conference on Electrical Engineering, 2015.
- Ranked 67th among 270,000 participants in the nationwide entrance examination of Iran universities, 2006.

PUBLICATIONS

- **Journal Papers**

1. H. Zeng, H. Pirayesh, P. Kheirkhah Sangdeh, and A. Quadri, and , "VehCom: Delay-guaranteed message broadcast for large-scale vehicular networks," in *IEEE Transactions on Wireless Communications*, 2021.
2. P. Kheirkhah Sangdeh, H. Pirayesh, A. Quadri, and H. Zeng, "A practical spectrum sharing scheme for cognitive radio networks: Design and experiments," in *IEEE/ACM Transactions on Networking*, vol. 28, no. 4, pp. 1818–1831, 2020.
3. H. Pirayesh, P. Kheirkhah Sangdeh, and H. Zeng, "Coexistence of Wi-Fi and IoT communications in WLANs," in *IEEE Internet of Things Journal*, vol. 7, no. 8, pp. 7495–7505, 2020.
4. P. Kheirkhah Sangdeh, H. Pirayesh, Q. Yan, K. Zeng, W. Lou, and H. Zeng, "A practical downlink NOMA scheme for wireless LANs," in *IEEE Transactions on Communications*, vol. 68, no. 4, pp. 2236–2250, 2020.
5. H. Pirayesh, P. Kheirkhah Sangdeh, and H. Zeng, "Securing ZigBee communications against constant jamming attack using neural network," in *IEEE Internet of Things Journal*, 2020.
6. B. Barari, P. Kheirkhah Sangdeh and B. Akhbari, "Secure degrees of freedom of two-user X-channel with synergistic alternating channel state information," in *IET Information Security*, vol. 13, no. 1, pp. 54–60, 2019.

- **Conference Papers**

1. P. Kheirkhah Sangdeh, H. Pirayesh, A. Mobiny, and H. Zeng, "LB-SciFi: Online learning-based channel feedback for MU-MIMO in wireless LANs," in *Proc. of 28th International Conference on Network Protocols (ICNP)*, Madrid, Spain, 2020, pp. 1–11. **[Acceptance rate: 16.8%]**
2. A. Quadri, H. Pirayesh, P. Kheirkhah Sangdeh, and H. Zeng, "TCCI: Taming co-channel interference for wireless LANs," in *Proc. of 21st international symposium on theory, algorithmic foundations, and protocol design for mobile networks and mobile computing (MobiHoc)*, 2020, pp. 251–26. **[Acceptance rate: 15.0%]**
3. P. Kheirkhah Sangdeh, H. Pirayesh, H. Zeng and H. Li, "A practical underlay spectrum sharing scheme for cognitive radio networks," in *Proc. of IEEE Conference on Computer Communications (INFOCOM)*, Paris, France, 2019, pp. 2521–2529. **[Acceptance rate: 19.7%]**
4. H. Pirayesh, P. Kheirkhah Sangdeh, and H. Zeng, "EE-IoT: An energy-efficient IoT communication scheme for WLANs," in *Proc. of IEEE Conference on Computer Communications (INFOCOM)*, Paris, France, 2019, pp. 361–369. **[Acceptance rate: 19.7%]**
5. B. Barari, P. Kheirkhah Sangdeh, and B. Akhbari, "Secure degrees of freedom of two-user two-hop X-channel," in *Proc. of 25th Iranian Conference on Electrical Engineering (ICEE),* Tehran, Iran, 2017, pp. 1911-1916.
6. P.Kheirkhah Sangdeh, M. Mirmohseni, and F. Poursabzi, "Applying the Byzantine agreement in wireless sensor networks based on clustering," in *Proc. of 23rd Iranian Conference on Electrical Engineering (ICEE),* Tehran, Iran, 2015, pp. 619–624.
7. P. Kheirkhah Sangdeh, M. Mirmohseni, and M. A. Akhaee, "Blind interference alignment for three-user multi-hop SISO interference channel," in *Proc. of 6th International Congress on Ultra Modern Telecommunications and Control Systems and Workshops (ICUMT)*, St. Petersburg, 2014, pp. 462–467.
8. P. Kheirkhah Sangdeh, M. Mirmohseni, and M. A. Akhaee, "Interference alignment for two-user two-hop interference x-channel with delayed and No CSIT," in *Proc. of 6th International Congress on Ultra Modern Telecommunications and Control Systems and Workshops (ICUMT)*, St. Petersburg, 2014, pp. 473-479.

- **Book Chapter**

1. P. Kheirkhah Sangdeh and H. Zeng, "Overview of multiplexing techniques in wireless networks," In *Multiplexing*, S. Mohammady, London, UK: IntechOpen, 2019, pp. 1-15.

WORK EXPERIENCE

- **Michigan State University** *(Sep. 2020 - Present)*
  Graduate Research Assistant, East Lansing, Michigan
  - Integration of artificial intelligence into wireless local area networks
  - Theoretical analysis, design, and implementation of novel networking protocols in real-world wireless environments
- **University of Louisville** *(Aug. 2018 - Aug. 2020)*
  Graduate Fellow, Louisville, Kentucky
  - Wireless communications and intelligent networking
  - Theoretical analysis, algorithm and protocol design, and system implementation.
- **University of Louisville** *(Aug. 2017 - Aug. 2018)*
  Graduate Research Assistant, Louisville, Kentucky
  - Wireless communications and intelligent networking
  - Theoretical analysis, algorithm and protocol design, and system implementation.

SUBMITTED PAPERS AND ONGOING WORKS

1. P. Kheirkhah Sangdeh and H. Zeng, "DeepMux: Deep-learning-based channel sounding and resource allocation for wireless LANs," will be submitted to *IEEE Journal on Selected Areas in Communications*, 2020.

2. P. Kheirkhah Sangdeh, H. Pirayesh, H. Zeng, and Q. Yan, "DM-COM: Combining device-to-device and MU-MIMO communications for cellular networks," submitted to *IEEE Internet of Things Journal*, 2020.
3. H. Pirayesh, P. Kheirkhah Sangdeh, Q. Yan, and H. Zeng, "UD-MIMO: Uplink distributed MIMO for wireless LANs," submitted to *IEEE Transactions on Communications*, 2020.

PROFESSIONAL ACTIVITIES

- **Editorial Membership**
  - American Journal of Networks and Communications, 2020-2021.
- **Technical Program Committee**
  - International Conference on Computers, Data Management and Technology Applications, Turkey, Aug. 2016.
  - Global Summit on Computer and Information Technology, Tunisia, Jul. 2016.
- **Reviewer - Journals**
  - o IEEE Transactions on Vehicular Technology
  - o IEEE Transactions on Circuits and Systems II
  - o KSII Transactions on Internet and Information Systems
  - o International Journal of Communication Systems
  - o IEEE Communications Letters
  - o IEEE Internet of Things Journal
  - o IEEE Systems Journal
  - o IET Information Security
  - o IEEE Access
- **Reviewer - Conferences**
  - o IEEE International Conference on Computer Communications (INFOCOM), 2020.
  - o IEEE Wireless Communications and Networking Conference (WCNC), 2019.
  - o International Conference on Computing, Networking and Communications (ICNC), 2019.
  - o Iran Workshop on Communication and Information Theory (IWCIT), 2017.
  - o IEEE Global Communications Conference (GLOBECOM), 2017.
- **Teaching Assistantship**
  - MATLAB Programming, University of Louisville, Fall 2019.
  - Probability and Statistics, Iran University of Science and Technology, Fall 2013.

PRESENTATIONS AND TALKS

- Online learning-based channel feedback for MU-MIMO in wireless LANs, ICNP, Online, 2020.
- Taming co-channel interference for wireless LANs, MobiHoc, Online, 2020.
- Secure degrees of freedom of two-user two-hop X-channel, ICEE, K. N. Toosi University of Technology, Tehran, Iran, 2017.
- Applying the Byzantine agreement in wireless sensor networks based on clustering, ICEE, Sharif University of Technology, Tehran, Iran, 2015.

REFERENCES

• Dr. Huacheng Zeng	Assistant Professor	Michigan State University	hzeng@msu.edu
• Dr. Mahtab Mirmohseni	Associate Professor	Sharif University of Technology	mirmohseni@sharif.edu
• Dr. Hongxiang Li	Associate Professor	University of Louisville	h.li@louisville.edu