NASHID SHAHRIAR

Department of Computer Science
University of Regina (UOFR)
http://uregina.ca//∼ *nss*373/
Nashid.Shahriar@uregina.ca

EMPLOYMENT

Assistant Professor September 2020 - Present
Department of Computer Science, University of Regina

Lecturer July 2020 - August 2020
Department of Computer Science, University of Regina

Teaching and Research Assistant May 2014 - August 2015 and January 2016 - April 2020
David R. Cheriton School of Computer Science, University of Waterloo

Lecturer April 2009 - April 2014
Computer Science and Engineering Dept., Bangladesh University of Engineering and Technology

RESEARCH INTERESTS

Computer and communication networks, Cybersecurity, Application of Machine learning, Artificial intelligence, and Optimization techniques to emerging problems in Networking, Cybersecurity, and Public Health

EXTERNAL RESEARCH GRANTS

Principal Investigator

1. **N. Shahriar**. Life-cycle Management for Network Slices. NSERC Discovery Grant and Discovery Launch Supplement, **$157,500**, 2021-2025.
2. **N. Shahriar**. Low Latency, Robust and Reliable Multi-party Interactive Live Video Streaming. Mitacs Accelerate, **$75,000**, 2022-2023.
3. **N. Shahriar**. Manage Security Operations Center (SoC). Mitacs Business Strategy Internship, **$30,000**, 2022-2023.
4. **N. Shahriar**. Intrusion Detection System for 5G Network Slices. NSERC Idea to Innovation, **$20,000**, 2023.
5. **N. Shahriar**. A Novel Phishing Detection Approach Using Fuzzy Logic and Deep Learning. Mitacs Accelerate, **$15,000**, 2023.

Co-Principal Investigator

1. R. Boutaba, R. Langar, and **N. Shahriar**. Secure and Reliable End-to-End Network Slicing for 5G and Beyond Mobile Networks. Innovation for Defence Excellence and Security (IDEaS) Innovation Networks, Department of National Defence, **$207,000** of $1,499,838, 2022-2025.
2. R. Boutaba, Ali Mashtizadeh, and **N. Shahriar**. 5G-LEAP - Flexible Open RAN Platform for 5G and Beyond Networks. NSERC Alliance/Mitacs Accelerate, **$90,000** of $600,000, 2023-2024.
3. R. Boutaba and **N. Shahriar**. 5G-ELITE: AI-driven 5G Network Slice Operations and Management. Mitacs Accelerate, **$60,000** of of $450,000, 2021-2023.
4. **N. Shahriar** and K. Yow. AI-based Virtual Assistant and Fraud Detection for the Insurance Industry. Mitacs Accelerate, **$30,000** of $60,000, 2022-2023.

TEACHING CONTRIBUTIONS AT UOFR

- **CS 890EU** (Foundations of Modern Networking)
  - Winter 2022 (new course development, 12 students)
  - Summer 2022 (2 students - directed reading)
  - Winter 2023 (1 student - directed reading)
- **CS 710** (Python & Data Fundamentals)
  - Fall 2022 (new course development, 26 students)
- **CS 335** (Computer Networks)
  - Summer 2021 (new course preparation, 77 students)
  - Fall 2021 (57 students)
  - Summer 2022 (67 students)
  - Winter 2023 (102 students)
  - Summer 2023 (1 student - directed reading)
- **CS 301** (Digital Systems Architecture)
  - Winter 2021 (new course preparation, 44 students)

GRADUATE STUDENT SUPERVISION AT UOFR

- **Supervisor** - 1 PhD and 8 MSc (Thesis) students
- **Co-supervisor** - 1 Post doctoral fellow and 1 MSc (Thesis) student
- **External Examiner** - 6 MASc (Thesis) students
- **Supervisory Committee Member** - 4 PhD, 3 MSc (Thesis) and 2 MSc (Project) students
- **Honours Examination Committee Member** - 1 student

SERVICE CONTRIBUTIONS AT UOFR

Member, Executive of Council — 2021-2025
University of Regina

Member, Graduate Committee (Data Science) — 2023-present
Department of Computer Science, University of Regina

Member, Undergraduate Co-op Committee — 2022 - Present
Department of Computer Science, University of Regina

Member, Outreach/External/Web Committee — 2023-present
Department of Computer Science, University of Regina

Chair, Graduate Committee (Data Science) — 2022
Department of Computer Science, University of Regina

Chair, Undergraduate Co-op Committee — 2021
Department of Computer Science, University of Regina

Member, Graduate Committee — 2020-2021
Department of Computer Science, University of Regina

EDUCATION

Doctor of Philosophy in Computer Science — May 2014 - July 2020
University of Waterloo, Canada

Master of Science in Computer Science and Engineering — May 2009 - May 2011
Bangladesh University of Engineering and Technology

Bachelor of Science in Computer Science and Engineering — March 2004 - February 2009
Bangladesh University of Engineering and Technology

AWARDS AND SCHOLARSHIPS

Best Student Paper Award, IEEE/IFIP NOMS 2022 — 2022
Best Ph.D Dissertation Award, IFIP/IEEE IM 2021 — 2021
Mathematics Doctoral Prize, University of Waterloo (CAD 1500) — 2021
PhD Alumni Gold Medal, University of Waterloo (Gold Medal) — 2020
Best Paper Award, IEEE/ACM/IFIP CNSM (Euro 500) — 2019
Best Student Paper Award, IEEE NetSoft — 2019
Best Paper Award, IEEE/ACM/IFIP CNSM (USD 500) — 2017
Best Paper Runner-up Award, HotPOST Workshop held with IEEE ICDCS — 2013
Ontario Graduate Scholarship (CAD 15,000 per annum) — 2018-2020
President's Graduate Scholarship (CAD 5,000 per annum) — 2018-2020
David R. Cheriton Graduate Scholarship (CAD 10,000 per annum) — 2014-2018
Conference Travel Grants: IEEE INFOCOM 2019 ($500), IEEE/ACM/IFIP CNSM 2019 ($ 750), IFIP Networking 2016 (Euro 375), IEEE/ACM/IFIP CNSM 2016 ($ 500), IEEE/ACM/IFIP CNSM 2015 ($ 1000)

PUBLICATION LIST

Book Chapters

1. R. Boutaba, **N. Shahriar**, M. A. Salahuddin, and N. Limam, "Managing virtualized networks and services with machine learning," in *Communication Networks and Service Management in the Era of Artificial Intelligence and Machine Learning*. Wiley Online Library, 2021, pp. 33–68.
2. A. S. Azad, M. K. Hasan, M. A. I. Rahman, M. M. Rahman, and **N. Shahriar**, "Exploring the behavior and changing trends of rainfall and temperature using statistical computing techniques," in *Computational Intelligence Techniques in Earth and Environmental Sciences*. Springer, 2014, pp. 53–78.

Articles in Peer-reviewed Journals and Magazines

1. S. S. Johari, S. Taeb, **N. Shahriar**, S. R. Chowdhury, M. Tornatore, R. Boutaba, J. Mitra, and M. Hemmati, "Drl-assisted reoptimization of network slice embedding on eon-enabled transport networks," *IEEE Transactions on Network and Service Management*, vol. 20, no. 1, pp. 800–814, 2023. (Impact factor: 3.878)
2. D. Harutyunyan, **N. Shahriar**, R. Boutaba, and R. Riggio, "Latency and mobility-aware service function chain placement in 5G networks," *IEEE Transactions on Mobile Computing*, vol. 21, no. 5, pp. 1697–1709, 2022. (Impact factor: 5.112)
3. **N. Shahriar**, M. Zulfiqar, S. R. Chowdhury, S. Taeb, R. Boutaba, J. Mitra, and M. Hemmati, "Disruption minimized bandwidth scaling in EON-enabled transport network slices," *IEEE Journal on Selected Areas in Communications*, vol. 39, no. 9, pp. 2734–2747, 2021. (Impact factor: 9.302)

4. **N. Shahriar**, S. Taeb, S. R. Chowdhury, M. Zulfiqar, M. Tornatore, R. Boutaba, J. Mitra, and M. Hemmati, "Reliable slicing of 5G transport networks with bandwidth squeezing and multi-path provisioning," *IEEE Transactions on Network and Service Management*, vol. 17, no. 3, pp. 1418–1431, 2020. (Impact factor: 3.878)

5. P. Borylo, M. Tornatore, P. Jaglarz, **N. Shahriar**, P. Chołda, and R. Boutaba, "Latency and energy-aware provisioning of network slices in cloud networks," *Elsevier Computer Communications*, vol. 157, pp. 1 – 19, 2020. (Impact factor: 2.77)

6. **N. Shahriar**, R. Ahmed, S. R. Chowdhury, M. M. A. Khan, R. Boutaba, J. Mitra, and F. Zeng, "Virtual network embedding with guaranteed connectivity under multiple substrate link failures," *IEEE Transactions on Communications*, vol. 68, no. 2, pp. 1025–1043, 2020. (Impact factor: 5.69)

7. **N. Shahriar**, S. R. Chowdhury, R. Ahmed, A. Khan, S. Fathi, R. Boutaba, J. Mitra, and L. Liu, "Virtual network survivability through joint spare capacity allocation and embedding," *IEEE Journal on Selected Areas in Communications*, vol. 36, no. 3, pp. 502–518, 2018. (Impact factor: 9.302)

8. R. Boutaba, M. A. Salahuddin, N. Limam, S. Ayoubi, **N. Shahriar**, F. Estrada-Solano, and O. M. Caicedo, "A comprehensive survey on machine learning for networking: evolution, applications and research opportunities," *Springer Journal of Internet Services and Applications*, vol. 9, no. 1, pp. 1–99, 2018. (700+ citations)

9. S. R. Chowdhury, S. Ayoubi, R. Ahmed, **N. Shahriar**, R. Boutaba, J. Mitra, and L. Liu, "Multi-layer virtual network embedding," *IEEE Transactions on Network and Service Management*, vol. 15, no. 3, pp. 1132–1145, 2018. (Impact factor: 3.878)

10. S. Ayoubi, N. Limam, M. A. Salahuddin, **N. Shahriar**, R. Boutaba, F. Estrada-Solano, and O. M. Caicedo, "Machine learning for cognitive network management," *IEEE Communications Magazine*, vol. 56, no. 1, pp. 158–165, 2018. (Impact factor: 10.356) (100+ citations)

11. **N. Shahriar**, R. Ahmed, S. R. Chowdhury, A. Khan, R. Boutaba, and J. Mitra, "Generalized recovery from node failure in virtual network embedding," *IEEE Transactions on Network and Service Management*, vol. 14, no. 2, pp. 261–274, 2017. (Impact factor: 3.878)

12. M. Ghaznavi, **N. Shahriar**, S. Kamali, R. Ahmed, and R. Boutaba, "Distributed service function chaining," *IEEE Journal on Selected Areas in Communications*, vol. 35, no. 11, pp. 2479–2489, 2017. (Impact factor: 9.302)

13. R. Boutaba, **N. Shahriar**, and S. Fathi, "Elastic optical networking for 5G transport," *Springer Journal of Network and Systems Management*, vol. 25, no. 4, pp. 819–847, 2017. (Impact factor: 1.676)

14. M. M. A. Khan, **N. Shahriar**, R. Ahmed, and R. Boutaba, "Multi-path link embedding for survivability in virtual networks," *IEEE Transactions on Network and Service Management*, vol. 13, no. 2, pp. 253–266, 2016. (Impact factor: 3.878)

15. S. R. Chowdhury, R. Ahmed, M. M. A. Khan, **N. Shahriar**, R. Boutaba, J. Mitra, and F. Zeng, "Dedicated protection for survivable virtual network embedding," *IEEE Transactions on Network and Service Management*, vol. 13, no. 4, pp. 913–926, 2016. (Impact factor: 3.878)

Papers in Peer-reviewed Conference and Workshop Proceedings

1. Md Abdullah Al Ahasan, Mengjun Hu, and **N. Shahriar**, "OFMCDM/IRF: A phishing website detection model based on optimized fuzzy multi-criteria decision-making and improved random forest," in *4th IEEE Silicon Valley Cybersecurity Conference*, 2023. [To appear]

2. Md. Shamim Towhid and **N. Shahriar**, "Early detection of intrusion in SDN," in *8th IEEE/IFIP International Workshop on Analytics For Network And Service Management (ANNET) to be held with IEEE/IFIP NOMS*, 2023. [To appear]

3. Mohamad H. Ahmadinejad, Tahmina Azmin, and **N. Shahriar**, "5G network slice type classification using traditional and incremental learning," in *IEEE/IFIP Network Operations and Management Symposium (NOMS)*, 2023. [To appear]

4. N. Saha, **N. Shahriar**, R. Boutaba, and A. Saleh, "Monarch: Network slice monitoring architecture for cloud native 5G deployments," in *IEEE/IFIP Network Operations and Management Symposium (NOMS)*, 2023. [To appear]

5. Tahmina Azmin, Mohamad H. Ahmadinejad, and **N. Shahriar**, "Bandwidth prediction in 5G mobile networks using informer," in *IEEE 13th International Conference on Network of the Future (NoF)*, 2022. (Acceptance Rate: 30%)

6. Khan, Md Sajid, Farzaneh, Behnam, **N. Shahriar**, N. Saha, and R. Boutaba, "Slicesecure: Impact and detection of DoS/DDoS attacks on 5G network slices," in *Symposium on Security for 5G and Future Networks - IEEE Future Networks World Forum*, 2022, pp. 639–642.

7. Md. Shamim Towhid and **N. Shahriar**, "Encrypted network traffic classification using self-supervised learning," in *IEEE 8th International Conference on Network Softwarization (NetSoft)*. IEEE, 2022, pp. 366–374. (Acceptance Rate: 24.9%)

8. Md. Shamim Towhid and **N. Shahriar**, "Encrypted network traffic classification in sdn using self-supervised learning," in *IEEE 8th International Conference on Network Softwarization (NetSoft)*. IEEE, 2022, pp. 243–245. (Acceptance Rate: 24.9%) [Demo paper]

9. S. S. Johari, **N. Shahriar**, M. Tornatore, R. Boutaba, and A. Saleh, "Anomaly detection and localization in nfv systems: An unsupervised learning approach," in *IEEE/IFIP Network Operations and Management Symposium (NOMS)*, 2022 (Acceptance Rate: 25.1%) [**Best Student Paper**].

10. N. Saha, A. James, **N. Shahriar**, R. Boutaba, and A. Saleh, "Demonstrating network slice kpi monitoring in a 5G testbed," in *IEEE/IFIP Network Operations and Management Symposium (NOMS)*, 2022. (Acceptance Rate: 25.1%)[Demo paper]

11. S. Taeb, **N. Shahriar**, S. R. Chowdhury, M. Tornatore, R. Boutaba, J. Mitra, and M. Hemmati, "Reoptimizing network slice embedding on EON-enabled transport networks," in *IEEE/ACM/IFIP 17th International Conference on Network and Service Management (CNSM)*, 2021, pp. 292–300. (Acceptance Rate: 19.4%)

12. R. Boutaba, **N. Shahriar**, M. A. Salahuddin, S. R. Chowdhury, N. Saha, and A. James, "AI-driven closed-loop automation in 5g and beyond mobile networks," in *Proceedings of the 4th ACM FlexNets Workshop on Flexible Networks Artificial Intelligence Supported Network Flexibility and Agility held with ACM SIGCOMM*, 2021.

13. **N. Shahriar** and R. Boutaba, "Survivable virtual network embedding," in *IFIP/IEEE International Symposium on Integrated Network Management (IM)*, 2021, pp. 748–753. [**Dissertation Digest Paper**]

14. **N. Shahriar**, M. Zulfiqar, S. R. Chowdhury, S. Taeb, M. Tornatore, R. Boutaba, J. Mitra, and M. Hemmati, "Disruption-minimized re-adaptation of virtual links in elastic optical networks," in *OSA Optical Fiber Communication Conference and Exposition (OFC)*, 2020, pp. Th2A-30.

15. **N. Shahriar**, S. Taeb, S. R. Chowdhury, M. Zulfiqar, M. Tornatore, R. Boutaba, J. Mitra, and M. Hemmati, "Reliable slicing of 5G transport networks with dedicated protection," in *IEEE/ACM/IFIP 15th International Conference on Network and Service Management (CNSM)*, 2019, pp. 1–9. (Acceptance Rate: 16.5%) [**Best Paper**]

16. S. Taeb, **N. Shahriar**, S. R. Chowdhury, M. Tornatore, R. Boutaba, J. Mitra, and M. Hemmati, "Virtual network embedding with path-based latency guarantees in elastic optical networks," in *2019 IEEE 27th International Conference on Network Protocols (ICNP)*. IEEE, 2019, pp. 1–12. (Acceptance Rate: 19.3%)

17. **N. Shahriar**, S. Taeb, S. R. Chowdhury, M. Tornatore, R. Boutaba, J. Mitra, and M. Hemmati, "Achieving a fully-flexible virtual network embedding in elastic optical networks," in *IEEE Conference on Computer Communications (INFOCOM)*, 2019, pp. 1756–1764. (Acceptance Rate: 19.6%)

18. D. Harutyunyan, R. Fedrizzi, **N. Shahriar**, R. Boutaba, and R. Riggio, "Orchestrating end-to-end slices in 5G networks," in *IEEE/ACM/IFIP 15th International Conference on Network and Service Management (CNSM)*, 2019, pp. 1–9. (Acceptance Rate: 16.5%)

19. D. Harutyunyan, **N. Shahriar**, R. Boutaba, and R. Riggio, "Latency–aware service function chain placement in 5G mobile networks," in *IEEE 6th Conference on Network Softwarization (NetSoft)*, 2019. (Acceptance Rate: 19.2%) **[Best Student Paper]**

20. **N. Shahriar**, S. R. Chowdhury, R. Ahmed, A. Khan, R. Boutaba, J. Mitra, and L. Liu, "Joint backup capacity allocation and embedding for survivable virtual networks," in *IFIP 16th Networking Conference*, 2017, pp. 1–9. (Acceptance Rate: 28.6%)

21. **N. Shahriar**, S. R. Chowdhury, R. Ahmed, M. Sharmin, R. Boutaba, and B. Mathieu, "Availability in P2P based online social networks," in *IEEE 4th International Conference on Networking, Systems and Security (NSysS)*, 2017, pp. 1–9.

22. S. R. Chowdhury, S. Ayoubi, R. Ahmed, **N. Shahriar**, R. Boutaba, J. Mitra, and L. Liu, "Mule: Multi-layer virtual network embedding," in *IEEE/ACM/IFIP 13th International Conference on Network and Service Management (CNSM)*, 2017, pp. 1–9. (Acceptance Rate: 17.6%) **[Best Paper]**

23. S. R. Chowdhury, R. Ahmed, **N. Shahriar**, A. Khan, R. Boutaba, J. Mitra, and L. Liu, "Revine: Reallocation of virtual network embedding to eliminate substrate bottlenecks," in *IFIP/IEEE Symposium on Integrated Network and Service Management (IM)*, 2017, pp. 116–124. (Acceptance Rate: 28.6%)

24. **N. Shahriar**, R. Ahmed, A. Khan, S. R. Chowdhury, R. Boutaba, and J. Mitra, "Renovate: Recovery from node failure in virtual network embedding," in *IEEE/ACM/IFIP 12th International Conference on Network and Service Management (CNSM)*, 2016, pp. 19–27. (Acceptance Rate: 15.5%)

25. **N. Shahriar**, R. Ahmed, S. R. Chowdhury, M. M. A. Khan, R. Boutaba, J. Mitra, and F. Zeng, "Connectivity-aware virtual network embedding," in *IFIP 15th Networking Conference*, 2016, pp. 46–54. (Acceptance Rate: 29%)

26. S. R. Chowdhury, R. Ahmed, M. M. A. Khan, **N. Shahriar**, R. Boutaba, J. Mitra, and F. Zeng, "Protecting virtual networks with drone," in *IEEE/IFIP Network Operations and Management Symposium (NOMS)*, 2016, pp. 78–86. (Acceptance Rate: 25.3%)

27. M. M. A. Khan, **N. Shahriar**, R. Ahmed, and R. Boutaba, "Simple: Survivability in multi-path link embedding," in *IEEE/ACM/IFIP 11th International Conference on Network and Service Management (CNSM)*, 2015, pp. 210–218. (Acceptance Rate: 17.6%)

28. M. Ghaznavi, A. Khan, **N. Shahriar**, K. Alsubhi, R. Ahmed, and R. Boutaba, "Elastic virtual network function placement," in *IEEE 4th International Conference on Cloud Networking (CloudNet)*, 2015, pp. 255–260. (200+ citations)

29. M. K. Rahman, M. Y. S. Uddin, **N. Shahriar**, and M. Rahman, "Sponge: A searchable P2P mobile app store using DHTs," in *IEEE 2nd International Conference on Networking Systems and Security (NSysS)*, 2015, pp. 1–6.

30. **N. Shahriar**, S. R. Chowdhury, M. Sharmin, R. Ahmed, R. Boutaba, and B. Mathieu, "Ensuring beta-availability in P2P social networks," in *3rd Workshop on Hot Topics in Peer-to-Peer Networking and Online Social Networks (HotPOST) held with IEEE 33rd International Conference on Distributed Computing Systems (ICDCS)*, 2013, pp. 150–155. (Acceptance Rate: 40%) [**Best Paper Runner-up**]
31. K. Solaiman, M. M. Rahman, and **N. Shahriar**, "AVRA Bangladesh collection, analysis & visualization of road accident data in Bangladesh," in *International Conference on Informatics, Electronics, and Vision (ICIEV)*, 2013, pp. 1–6.
32. **N. Shahriar**, M. Sharmin, R. Ahmed, M. M. Rahman, R. Boutaba, and B. Mathieu, "Diurnal availability for peer-to-peer systems," in *IEEE Consumer Communications and Networking Conference (CCNC)*, 2012, pp. 619–623.
33. A. S. Azad, M. Hasan, M. Rahman, M. Rahman, and **N. Shahriar**, "Changing trends of climate in bangladesh and a noble procedure of distribution of rainfall by clustering," in *International Conference Proceeding: Statistical Data Mining for Bioinformatics, Health, Agriculture and Environment*, 2012, pp. 405–411.
34. **N. Shahriar**, S. A. I. Mujib, A. R. Roy, and A. Rahman, "Iterative route discovery in AODV," in *24th IEEE International Conference on Advanced Information Networking and Applications (AINA)*, 2010, pp. 392–399.

PATENTS

Patents Granted

1. **N. Shahriar**, S. R. Chowdhury, R. Boutaba, M. Zulfiqar, J. Mitra, and M. Hemmati. System and method for elastic optical networks. U.S. Patent No. US11146349B2, Granted September 2021.
2. **N. Shahriar**, S. R. Chowdhury, R. Boutaba, J. Mitra, and M. Hemmati. Method and system for latency-aware embedding of a virtual network onto a substrate optical network. U.S. Patent No. US11044161B2, Granted June 2021.
3. S. R. Chowdhury, R. Ahmed, J. Mitra, **N. Shahriar**, R. Boutaba, and S. Ayoubi. Multi-layer virtual network embedding. U.S. Patent No. US10951317B2, Granted March 2021.
4. **N. Shahriar**, A. Khan, R. Ahmed, J. Mitra, S. R. Chowdhury, and R. Boutaba. System and method for joint embedding and backup provisioning in virtual networks. U.S. Patent No. 10,873,502 B2, Granted December 2020.
5. **N. Shahriar**, S. R. Chowdhury, R. Boutaba, S. Taeb, J. Mitra, and M. Hemmati. Method and system for reliability-aware embedding of a virtual network onto an elastic optical network. U.S. Patent No. 10,841,183 B1, Granted November 2020.
6. **N. Shahriar**, J. Mitra, R. Ahmed, S. R. Chowdhury, and R. Boutaba. Methods and systems for failure recovery in a virtual network environment. U.S. Patent No. 10,505,840 B2, Granted December 2019.
7. R. Ahmed, J. Mitra, S. R. Chowdhury, **N. Shahriar**, and R. Boutaba. Dedicated protection for virtual network embedding. U.S. Patent No. 10,313,195 B2, Granted June 2019.
8. R. Ahmed, J. Mitra, S. R. Chowdhury, **N. Shahriar**, and R. Boutaba. Connectivity-aware virtual network embedding. U.S. Patent No. 9,813,287 B2, Granted November 2017.

PROFESSIONAL SERVICE

Membership Development Chair, Executive Committee 2023-2024
IEEE South Saskatchewan Section

Poster Co-chair, Organizing Committee 2023
International Conference on Network and Service Management (CNSM)

Associate Editor 2023
Springer Annals of Telecommunications

Panelist, Panel Discussion on Cybersecurity 2023
Security BSides Regina

Publicity Co-Chair, Organizing Committee 2022
14th IFIP Wireless and Mobile Networking Conference (IFIP WMNC)

Co-chair, Technical Program Committee 2022
2nd International workshop on Fully-Flexible Internet Architectures and Protocols for the Next-Generation Tactile Internet (FlexNGIA) with IEEE/IFIP Network Operations and Management Symposium (NOMS)

Member, Technical Program Committee 2021-2022
International Conference on Network and Service Management (CNSM)

Member, Technical Program Committee 2020-2022
International Conference on the Design of Reliable Communication Networks (DRCN)

Organizer, CSEdWeek Python Code Camp 2022
Department of Computer Science, University of Regina

Member, National Cybersecurity Consortium (NCC) 2022-2025
Cyber Security Innovation Network, Government of Canada

Panelist, SaskTel ONE Cybersecurity Panel 2022
SaskTel

Speaker, Cyber Threats in Computer Networks 2021
Engineering Resilience in Critical Infrastructure Symposium, University of Regina

Panelist, Cybersecurity in 2021: New Threats, Challenges, and Opportunities in 2020 2020
7th International Conference on Networking, Systems and Security

Graduate Ambassador 2016-2020
David R. Cheriton School of Computer Science, University of Waterloo

Council Member, Computer Science Graduate Student Association 2015-2017
University of Waterloo

Student Representative, Graduate Recruiting Committee 2015-2016
David R. Cheriton School of Computer Science, University of Waterloo

Webmaster, Organizing Committee 2015
IEEE International Conference on Cloud Networking (CloudNet)

Project Proposal Review
NSERC Discovery Grant 2022
Mitacs Accelerate Grant 2021-2022

Journal and Magazine Article Review
IEEE Transactions on Network and Service Management (2018 - 2023), IEEE Transactions on Mobile Computing (2020 - 2023), IEEE Transactions on Computers (2023), IEEE Communications Magazine (2021-2023), IEEE Network Magazine (2022-2023), IEEE Networking Letters (2023), IEEE Internet of Things Magazine (2023), Elsevier Computer Networks (2020-2022), OSA Journal of Optical Communications and Networking (2021), IEEE Journal on Selected Areas in Communication (2020), IEEE Transactions on Communications (2018, 2019), Springer Journal of Network and Systems Management (2017, 2019), IEEE/OSA Journal of Optical Communications and Networking (2018), IEEE/OSA Journal of Lightwave Technology (2018), IEEE Access (2017, 2018), Springer Journal of Internet Services and Applications (2017), Elsevier Journal of Network and Computer Applications (2017), International Journal of Parallel, Emergent and Distributed Systems (2016), The Computer Journal (2016)

Conference Paper Review
IFIP Networking Conference (2023), IEEE International Conference on Communications (2020, 2021),

IEEE/IFIP Network Operations and Management Symposium (2016, 2020), IFIP/IEEE Symposium on Integrated Network and Service Management (2015, 2017), IFIP Networking Conference (2016, 2019), IEEE International Conference on Distributed Computing Systems (2017, 2019), IEEE Conference on Network Function Virtualization and Software Defined Networks (2017), IEEE Symposium on Computers and Communication (2017), International Conference on Dependability in Sensor, Cloud, and Big Data Systems and Applications (2015)