Safdar Hussain **Bouk**

Research Assistant Professor · Ph.D. in Engineering (Wireless Communications)

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Areas of Interest: IoT, Medium Access Control, Vehicular Networks, Access Delay in 5G and Next-G Networks

Work Experience

Old Dominion University Research Foundation
VA, USA

Research Assistant Professor, *Jun. 2024 - To Date*

- **Research Areas:** Next Generation Networks, Machine Learning, Cybersecurity,
- *Lead funded projects and seek new funding as principal and co-principal investigator | Conducting research | Mentoring graduate research.*

Old Dominion University
VA, USA

Research Assistant Professor, *Jan. 2022 - Jun. 2024*

- **Research Areas:** Next Generation Networks, Machine Learning, Cybersecurity
- *Lead funding proposal write-up groups | Conducting research | Mentoring graduate research.*

Daegu Gyeongbuk Institute of Science and Technology (DGIST)
Daegu, Republic of Korea

Research Professor, Information and Communication Engineering *Aug. 2017 - Aug. 2021*

- **Research Areas:** Vehicular Named-Data Networks and resilient Cyber-Physical Systems (CPS).
- *Graduate and Undergrad course*: Computer Networks.
- IoT: 80% Less network delay, 50% more Contention-Free Period utilization.
- Vehicular Network: ≈170% more content discovery ≈280% more network area in highway and urban traffic scenarios.

Kyungpook National University
Daegu, Republic of Korea

Post-Doctoral Fellow and Research Professor, School of Computer Science and Engineering *Feb. 2014 - Nov. 2016*

- **Research Areas**: Vehicular, Named-Data, Acoustic, and Sensor Networks.
- *Project*: Brain Korea 21^{+}.
- On Leave from COMSATS during the Post-Doctoral fellowship period.

COMSATS Institute of Information Technology
Islamabad, Pakistan

Assistant Professor, Dept. of Electrical Engineering *Nov. 2010 - Jan. 2014*

- **Research:** Wireless Sensor Networks, Underwater Acoustic Networks, and Wireless Ad hoc networks.
- **Taught graduate and undergrad courses**
- **Services:**
  - Supervised graduate (1 Ph.D. and 10 M.S.) and undergrad (15+) research projects.
  - Convener-Teaching quality assurance committee. (≈10% high faculty throughput.)
  - Member-graduate Supervisory committee

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Quaid-e-Awam University of Engineering, Science & Technology
Nawabshah, Pakistan

Lecturer, Dept. of Computer Systems Engineering *Feb. 2002 - Mar. 2005*

- *Teaching and supervising undergrad students*
- Supervised 6+ undergraduate projects.

Education

Keio University
Yokohama, Japan

Ph.D. in Engineering *Sep. 2007 - Oct. 2010*

- **Thesis:** Autoconfiguration, Multi-Metric Clustering and Gateway Selection Schemes for Mobile Ad-hoc Networks
- **Awarded** Japanese Ministry of Education, Culture, Sports, Science and Technology, MEXT, (Monbukagakusho) scholarship.
- Achievements:
  - ≈71% less IP allocation latency,
  - ≈10% less number of clusterheads,
  - ≈52% less clusterhead changes,
  - ≈26% less cluster re-affiliations,
  - ≈49% low battery consumption.

Keio University *Yokohama, Japan*

Masters of Engineering *Apr. 2005 - Sep. 2007*

- **Thesis:** IPv6 Autoconfiguration for Hierarchical Mobile Ad hoc Networks with Efficient Leader Election Algorithm
- **Awarded** Japanese Ministry of Education, Culture, Sports, Science and Technology, MEXT, (Monbukagakusho) scholarship.
- Achieved 70% less IP Address autoconfiguration latency.
- Completed the mandatory Japanese Language course from Apr-Aug 2005.

University of Illinois Urbana-Champaign *IL, USA*

Visiting Scholar *Jul. 2001 - Sep. 2001*

- Study and analysis of Google crawling algorithm and page indexing methods.

Mehran University of Engineering and Technology *Jamshoro, Pakistan*

Bachelors of Engineering (Computer Systems) *Mar. 1996 - Jun. 2001*

- ***Gold Medal:*** *Best Graduate* - 1^{st} position every year, throughout the B. Engg. degree.
- ***Gold Medal:*** *Top of The Faculty* - Highest percentage in the university.
- ***Silver Medal:*** 1^{st} position in final year of the B. Engg. degree.
- **CGPA :** 4.0/4.0
- **Thesis:** Study and Analysis of Cryptographic Algorithms

Projects

Following is the list of projects that I have been working on during my tenure at ODU:

1. ***Co-PI*** - Center for Offshore Wind Energy Cyber Vulnerabilities and Threat Identification, (DoD) | 2024-2025 | $1.00 Mil.
2. ***Co-PI*** - Cybersecurity Center for Offshore Wind Energy, (DoE - Congressionally Directed Spending) | 2024-2025 | $1.24 Mil.
3. ***Project Director and Co-PI*** - Cybersecurity Readiness for Small Businesses (US SBA) | 2023-2025 | $1.00 Mil.
4. ***Co-PI*** - Self-Sovereign Identity (SSI) Management for 5G-enabled Medical Devices, (Commonwealth Commercialization Fund - VIPC), 2023-2024 | $100,000.
5. ***PI*** - Addressing Cybersecurity Compliance Challenges to Technology Adoption for the Maritime Industry (C3TAP-M) (RFP COVACCI-23.01) | 2023-2024 | $100,000.

Following is the list of projects that I worked as a researcher during my tenure at South Korea:

1. ***Institute for Information & communications Technology Promotion*** *(IITP): Vehicular cyber-physical systems.*
2. ***Ministry of Science and ICT (MSIT), Government of Korea.*** *Resilient Cyber-Physical Systems Research and Other topics.*
3. ***Global Research Laboratory Program - National Research Foundation of Korea*** *(NRF)*
4. ***Brain Korea 21 Plus*** *(BK21+): Vehicular NETWORKS and other topics*
5. ***C-ITRC****: Convergence Information Technology Research Center*

Publications, Books, & Patents

Selected Journal Papers

28. M. T. R. Khan, Y. Z. Jembre, M. M. Saad, ***Safdar Hussain Bouk***, S. H. Ahmed and D. Kim, "Proactive Content Retrieval Based on Value of Popularity in Content-Centric Internet of Vehicles," in IEEE Transactions on Intelligent Transportation Systems, 2024 [in Press] DOI:10.1109/TITS.2024.3378669
27. Arshid Ali, Laiq Khan, Nadeem Javaid, ***Safdar Hussain Bouk***, Abdulaziz Aldegheishem, and Nabil Alrajeh, "*Mitigating Anomalous Electricity Consumption in Smart Cities using an AI-based Stacked-Generalization Technique*," IET Renewable Power Generation, vol. 1, no. 1, pp. 1-1, 2023, [In Press]. DOI:10.1049/rpg2.12785
26. Abid Jamal, Muhammad Umar Javed, Nabil Alrajeh, ***Safdar Hussain Bouk***, Nadeem Javaid, "*Blockchain-based Reputation Management, Data Storage and Distributed Revocation in Vehicular Energy Networks in Smart Health Care Systems*," Cluster Computing, vol. 1, no. 1, pp. 1-1, 2023, [In Press]. DOI:10.1007/s10586-023-04085-9
25. ***Safdar Hussain Bouk*** and S. H. A. Shah, "*Named-Cooperative Adaptive Cruise Control: An Application of NDN*," in IEEE Internet of Things Magazine, vol. 5, no. 3, pp. 100-104, September 2022. DOI:10.1109/IOTM.001.2100199
24. ***Safdar Hussain Bouk***, Syed Hassan Ahmed, Yongsoon Eun, and Kyung-Joon Park, "*Multimodal Named Data Discovery with Interest Broadcast Suppression for Vehicular CPS*," IEEE Transactions on Mobile Computing, vol. 20, no. 5, pp. 1877-1891, 1 May 2021. DOI:10.1109/TMC.2020.2971479
23. Sangrez Khan, Ahmad Naseem Alvi, Muhammad Awais Javed, and ***Safdar Hussain Bouk***, " An Enhanced Superframe Structure of IEEE 802.15.4 Standard for Adaptive Data Requirement", Computer Communications, Volume 169, pp. 59-70, 1 March 2021. DOI:10.1016/j.comcom.2020.12.023.

22. S. Rani, N. Saravanakumar, S. Rajeyyagari, V. Porkodi, and ***Safdar Hussain Bouk***, "*QoS aware cross layer paradigm for urban development applications in IoT*," Wireless Networks (2020). DOI:10.1007/s11276-020-02430-z
21. W. U. Rehman, T. Salam, A. Almogren, K. Haseeb, I. Ud Din, and ***Safdar H. Bouk***, "Improved Resource Allocation in 5G MTC Networks," IEEE Access, vol. 8, no. X, pp. 49187-49197, 2020. DOI:10.1109/ACCESS.2020.2974632
20. ***Safdar Hussain Bouk***, Syed Hassan Ahmed, Kyung-Joon Park, and Yongsoon Eun, "*Efficient Data Broadcast Mitigation in Multisource Named-Content Discovery for Vehicular CPS*," IEEE Communications Letters, vol. 23, no. 9, pp. 1644-1647, Sept. 2019. DOI:10.1109/LCOMM.2019.2928538
19. ***Safdar Hussain Bouk***, Syed Hassan Ahmed, Kyung-Joon Park, and Yongsoon Eun, "*Interest Broadcast Suppression Scheme for Named Data Wireless Sensor Networks*," IEEE Access, vol. 7, pp. 51799-51809, Apr. 2019. DOI:10.1109/ACCESS.2019.2910281
18. B. Omoniwa, R. Hussain, M. A. Javed, ***Safdar Hussain Bouk*** and S. A. Malik, "*Fog/Edge Computing-based IoT (FECIoT): Architecture, Applications, and Research Issues*," in IEEE Internet of Things Journal, vol. 6, no. 3, pp. 4118-4149, June 2019. DOI:10.1109/JIOT.2018.2875544
17. ***Safdar Hussain Bouk***, Syed H. Ahmed, Rasheed Hussain, and Yongsoon Eun "*Named Data Networking's Intrinsic Cyber-Resilience for Vehicular CPS*," in IEEE Access, vol. 6, pp. 60570-60585, Oct. 2018. DOI:10.1109/ACCESS.2018.2875890
16. ***Safdar Hussain Bouk***, Syed Hassan Ahmed, Dongkyun Kim, Kyung-Joon Park, Yongsoon Eun, and Jaime Lloret, "*LAPEL: hop Limit based Adaptive PIT Entry Lifetime for Vehicular Named Data Networks*," IEEE Transactions on Vehicular Technology, vol. 67, no. 7, pp. 5546-5557, July 2018. DOI:10.1109/TVT.2018.2797693
15. Rasheed Hussain, ***Safdar Hussain Bouk***, Nadeem Javaid, Adil M. Khan, and Jooyoung Lee, "*Realization of VANET-based Clouds Services Through Named Data Networking*," IEEE Communications Magazine, vol. 56, no. 8, pp. 168-175, Aug. 2018. DOI:10.1109/MCOM.2018.1700514
14. Syed Hassan Ahmed, ***Safdar Hussain Bouk***, Muhammad Azfar Yaqub, Dongkyun Kim, and Houbing Song, "*DIFS: Distributed Interest Forwarder Selection in Vehicular Named Data Networks*," in IEEE Transactions on Intelligent Transportation Systems, vol. 19, no. 9, pp. 3076-3080, Sept. 2018. DOI:10.1109/TITS.2017.2768329
13. Syed Hassan Ahmed, ***Safdar Hussain Bouk***, Dongkyun Kim, Danda B. Rawat, and Houbing Song, "*Named Data Networking for Software Defined Vehicular Networks*," IEEE Communications Magazine, vol. 55, no. 8, pp. 60-66, Aug. 2017. DOI:10.1109/MCOM.2017.1601137
12. ***Safdar Hussain Bouk***, Syed Hassan Ahmed, Dongkyun Kim, and Houbing Song, "*Named Data Networking based ITS for Smart Cities*," IEEE Communications Magazine, vol. 55, no. 1, pp. 105-111, Jan. 2017. DOI:10.1109/MCOM.2017.1600230CM
11. Syed Hassan Ahmed, ***Safdar Hussain Bouk***, M. A. Yaqub, Dongkyun Kim, Houbing Song, and Jaime Lloret "*CODIE: Controlled Data and Interest Evaluation in Vehicular Named Data Networks*," IEEE Transactions on Vehicular Technology, Volume 65, Issue 6, pp. 3954 - 3963, June 2016. DOI:10.1109/TVT.2016.2558650
10. ***Safdar Hussain Bouk***, Syed Hassan Ahmed, Dongkyun Kim, and Mario Gerla "*DPEL: Dynamic PIT Entry Lifetime in Vehicular Named Data Networks*," IEEE Communications Letters, vol.20, no.2, pp.336-339, Feb. 2016. DOI:10.1109/LCOMM.2015.2508798
9. A. N. Alvi, **Safdar H. Bouk**, S. H. Ahmed, M. A. Yaqub, M. Sarkar and H. Song, "*BEST-MAC: Bitmap-Assisted Efficient and Scalable TDMA-Based WSN MAC Protocol for Smart Cities*," IEEE Access, vol. 4, pp. 312-322, 2016. DOI:10.1109/ACCESS.2016.2515096
8. ***Safdar Hussain Bouk***, Syed Hassan Ahmed, and Dongkyun Kim "*Hierarchical and Hash based Naming with Compact Trie Management Scheme for VCCN*," Computer Communications, 71, pp. 73-83, Nov. 2015. DOI:10.1016/j.comcom.2015.09.014
7. Syed Hassan Ahmed, ***Safdar Hussain Bouk***, and Dongkyun Kim "*RUFS: RobUst Forwarder Selection in Vehicular Content-centric Networks*," IEEE Communications Letters, vol.19, no.9, pp.1616-1619, Jul. 2015. DOI:10.1109/LCOMM.2015.2451647
6. ***Safdar Hussain Bouk***, Syed Hassan Ahmed, Babatunji Omoniwa, and Dongkyun Kim, "*Outage Minimization Using Bivious Relaying Scheme in Vehicular Delay Tolerant Networks*," Wireless Personal Communications, Vol. 84, No. 4, pp. 2679-2692, Oct. 2015. DOI:10.1007/s11277-015-2760-0
5. Ahmed Naseem Alvi, ***Safdar H. Bouk***, S. H. Ahmed, M. A. Yaqoob, N. Javaid, and Dongkyun Kim, "*Enhanced TDMA based MAC Protocol for Adaptive Data Control in Wireless Sensor Networks,*" Journal of Communications and Networks, vol. 17, no. 3, pp. 247-255, June 2015. DOI:10.1109/JCN.2015.000046
4. ***Safdar Hussain Bouk***, I. Sasase, S. H. Ahmed, N. Javaid, "*Gateway Discovery Algorithm Based on Multiple QoS Path Parameters Between Mobile Node and Gateway Node*," Journal of Communications and Networks, Vol. 14, No. 4, pp. 434-442, Aug. 2012. DOI:10.1109/JCN.2012.6292250
3. ***Safdar Hussain Bouk*** and Iwao Sasase, "*Energy Efficient and Stable Weight Based Clustering for Ad hoc Networks*," IEICE Transactions on Communications, Vol.E92-B, No.09, pp. 2851-2863, Sep. 2009. DOI:10.1587/transcom.E92.B.2851
2. ***Safdar Hussain Bouk*** and Iwao Sasase, "*IPv6 Autoconfiguration for Hierarchical MANETs with Efficient Leader Election Algorithm*," Journal of Communication Networks (JCN), Vol. 11, No. 3, pp. 248-260, June 2009. DOI:10.1109/JCN.2009.6391329

1. Fudhiyanto P. Setiawan, ***Safdar Hussain Bouk*** and Iwao Sasase, "*An Optimum Multiple Metrics Gateway Selection Mechanism in MANET and Infrastructured Networks Integration*," IEICE Transactions on Communications, Vol.E92-B, No.08, pp. 2619-2627, Aug. 2009. DOI:10.1587/transcom.E92.B.2619

Selected Conference Papers

38. ***Safdar H. Bouk***, B. Omoniwa and S. Shetty, "*Predicting Downlink Retransmissions in 5G Networks Using Deep Learning*," IEEE CCNC, 2024, pp. 1056-1057.
37. Peter Foytik, **Safdar H. Bouk**, Gustave Anderson, and Sachin Shetty, "*Self-Sovereign Identity Management in Ship-Based 5G-Devices Use Case*," IEEE CCNC, 2024, pp. 650-651.
36. Boubakr Nour, Hakima Khelifi, Rasheed Hussain, Hassine Moungla, and ***Safdar H. Bouk***, "*A Collaborative Multi-Metric Interface Ranking Scheme for Named Data Networks*," IEEE IWCMC, pp. 2088-2093, 2020.
35. Muhammad Azfar Yaqub, Syed Hassan Ahmed, ***Safdar H. Bouk***, and Dongkyun Kim, "*Enabling critical content dissemination in vehicular named data networks*," Conference on Research in Adaptive and Convergent Systems (RACS), pp. 94-99, 2018.
34. Svetlana Ostrovskaya, Oleg Surnin, Rasheed Hussain, ***Safdar H. Bouk***, JooYoung Lee, Narges Mehran, Syed Hassan Ahmed, and Abderrahim Benslimane, "*Towards Multi-metric Cache Replacement Policies in Vehicular Named Data Networks*," 29^{th} Annual International Symposium on Personal, Indoor, and Mobile Radio Communications 2018 (PIMRC'18), pp. 1-7, 2018.
33. Ahmad Naseem Alvi, Rahat Mehmood, M. Talha Ahmed, Malik Abdullah, and ***Safdar H. Bouk***, "*Optimized GTS Utilization for IEEE 802.15.4 Standard*," International Conference on Selected Topics in Mobile and Wireless Networking (MoWNeT), pp. 125-130, 2018.
32. Svetlana Ostrovskaya, Oleg Surnin, Rasheed Hussain,***Safdar H. Bouk***, JooYoung Lee, Narges Mehran, Syed Hassan Ahmed, and Abderrahim Benslimane, "*Towards Multi-metric Cache Replacement Policies in Vehicular Named Data Networks*," PIMRC, pp. 1-7, 2018.
31. ***Safdar H. Bouk***, Syed Hassan Ahmed, Yongsoon Eun, and Kyung-Joon Park, "*Maximum Information Coverage in Named Data Vehicular Cyber-Physical Systems*," IEEE International Conference on Communications (ICC'18), pp. 1-7, 2018.
30. Muhammad Azfar Yaqub, Syed Hassan Ahmed, ***Safdar H. Bouk***, and Dongkyun Kim, "*Enabling Critical Content Dissemination in Vehicular Named Data Networks*," ACM RACS, pp. 94-99, 2018.
29. ***Safdar H. Bouk***, Syed Hassan Ahmed, and Dongkyun Kim, "*NDN Goes Deep: Foreseeing the Underwater Named Data Networks*," ACM Symposium on Applied Computing, (ACM SAC), pp. 642-646 , 2017.
28. M. A. Yaqub, Syed Hassan Ahmed, ***Safdar H. Bouk***, and Dongkyun Kim, "*Interest Forwarding in Vehicular Information Centric Networks: A Survey*," 1^{st} Annual ACM Symposium on Applied Computing (ACM SAC), pp. 724-729 , 2016.
27. M. A. Yaqub, Syed Hassan Ahmed, ***Safdar H. Bouk***, and Dongkyun Kim, "*FBR: Fleet Based video Retrieval in 3G and 4G enabled Vehicular Ad Hoc Networks*," IEEE International Conference on Communications (ICC), pp. 1-6, 2016.
26. Syed Hassan Ahmed, ***Safdar H. Bouk***, M. A. Yaqub, Dongkyun Kim, and Mario Gerla, "*CONET: COntrolled Data Packets Propagation in Vehicular Named Data NETworks*," 13^{th} IEEE Annual Consumer Communications & Networking Conference (CCNC), pp. 620-625, 2016.
25. Ahmed Naseem Alvi, ***Safdar H. Bouk***, Syed Hassan Ahmed, and Muhammad Azfar Yaqub, "*Influence of Backoff Period in Slotted CSMA/CA of IEEE 802.15.4*," International Conference on Wired/Wireless Internet Communication (WWIC) 2016, pp. 40-51, 2016.
24. Syed Hassan Ahmed, M. A. Yaqub, ***Safdar H. Bouk***, and Dongkyun Kim, "*Towards Content-Centric Traffic Ticketing in VANETs: An Application Perspective*," 3^{rd} International Workshop on Intelligent Vehicles 2015, in the 7^{th} ICUFN, pp. 237-239, 2015.
23. Syed Muhammad Sajjad, ***Safdar H. Bouk***, and Muhammad Yousaf, "*Neighbor Node Trust based Intrusion Detection System for WSN*," 6^{th} International Conference on Emerging Ubiquitous Systems and Pervasive Networks,EUSPN-2015, vol. 63, pp. 183-188, 2015.
22. ***Safdar H. Bouk***, Syed Hassan Ahmed, and Dongkyun Kim, "*Vehicular Content Centric Network (VCCN): A Survey and Research Challenges*," 30^{th} Annual ACM Symposium on Applied Computing (ACM SAC), pp. 695-700, 2015.
21. Syed Hassan Ahmed, ***Safdar H. Bouk***, and Dongkyun Kim, "*Adaptive Beaconing Schemes in VANETs: Hybrid Approach*," International Conference on Information Networking (ICOIN), pp. 340-345, 2015.
20. ***Safdar H. Bouk***, Myhammad Azfar Yaqub, Syed Hassan Ahmed, and Dongkyun Kim, "*Evaluating Interest/Data Propagation in Vehicular Named Data Networks*," ACM International Conference on Research in Adaptive and Convergent Systems, 2015, (RACS'15), pp. 256-259 , 2015.

19. Syed Hassan Ahmed, ***Safdar H. Bouk***, and Dongkyun kim, "*Reducing Scanning Latency in WiMAX Enabled VANETs*," Conference on Research in Adaptive and Convergent Systems (ACM RACS 2014), pp. 161-165 , 2014.
18. ***Safdar H. Bouk***, Syed Hassan Ahmed, and Dongkyun kim, "*Hierarchical and Hash-based Naming Scheme for Vehicular Information Centric Networks*," IEEE International Conference on Connected Vehicles and Expo, (ICCVE'14), pp. 765-766, 2014.
17. Tauseef Shah, Mansoor Mustafa, Syed Hassan Ahmed, ***Safdar H. Bouk***, and Dongkyun Kim, "*EE-PBC: Energy Efficient Position Based Clustering for Strip Area WSN*," 11^{th} International Conference on Frontiers of Information Technology, pp. 253-258, 2013.
16. B. Manzoor, N. Javaid, O. Rehman, ***Safdar H. Bouk***, S. H. Ahmed, S. H. Park, and D. Kim, "*Energy Aware Error Control in Cooperative Communication in Wireless Sensor Networks*," Research in Adaptive and Convergent Systems (ACM RACS), pp. 254-260 , 2013.
15. M.Mustafa, T.shah, ***Safdar H. Bouk***, Syed H.Ahmed, N.javaid, ''*Distributed Multiple Criteria based Clustering Scheme for Wireless Sensor Networks*," APWCS, 2013.
14. A. N. Alvi, S. S. Naqvi, ***Safdar H. Bouk***, N. Javaid, U. Qasim and Z. A. Khan, "*Evaluation of Slotted CSMA/CA of IEEE 802.15.4*," 7^{th} International Conference on Broadband, Wireless Computing, Communication and Applications, pp. 391-396, 2012.
13. Syed Hassan Ahmed, ***Safdar H. Bouk***, Amjad Mehmood, Nadeem Javaid, and Iwao Sasase, "*Effect of Fast Moving Object on RSSI in WSN: An Experimental Approach*," International Multi Topic Conference (IMTIC 12),pp. 43-51, 2012.
12. S. Hayat, N. Javaid, Z. A. Khan , A. Shareef , A. Mahmood, and ***Safdar H. Bouk***, "*Energy Efficient MAC Protocols in Wireless Body Area Sensor Network*," 5^{th} International Symposium on Advances of High Performance Computing and Networking (AHPCN-2012), pp. 1, 2012.
11. Syed Hassan Ahmed, ***Safdar H. Bouk***, Nadeem Javaid, and Iwao Sasase, "*RF Propagation Analysis of MICAz Mote's Antenna with Ground Effect*," 15^{th} International Multitopic Conference (INMIC), pp. 270-274, 2012.
10. S. Sagar, N. Javaid, Z. A. Khan, J. Saqib, A. Bibi, and ***Safdar H. Bouk***, "*Analysis and Modeling Experiment Performance Parameters of Routing Protocols in MANETs and VANETs*," IEEE 11^{th} International Conference on Trust, Security and Privacy in Computing and Communications, pp. 1867-1871, 2012.
9. N. Javaid, A. Bibi, ***Safdar H. Bouk***, A. Javaid, and I. Sasase, "*Modeling Enhancements in DSR, FSR, OLSR under Mobility and Scalability Constraints in VANETs*," IEEE International Conference on Communications (ICC), pp. 6504-6508, 2012.
8. N. Javaid, A. Bibi, K. Dridi, Z. A. Khan and ***Safdar H. Bouk***, ''*Modeling and Evaluating Enhancements in Expanding Ring Search Algorithm for Wireless Reactive Protocols*," 25^{th} IEEE Canadian Conference on Electrical and Computer Engineering (CCECE), pp. 1-4, 2012.
7. Syed Hassan Ahmed, ***Safdar H. Bouk***, Nadeem Javaid, and Iwao Sasase, "*Combined Human, Antenna Orientation in Elevation Direction and Ground Effect on RSSI in Wireless Sensor Networks*," 10^{th} IEEE International Conference on Frontiers of Information Technology (FIT' 12), vol. X, no. X, pp. 46-49, 2012.
6. Hidetoshi Kajikawa, Takero Fukuhara, ***Safdar H. Bouk***, and Iwao Sasase, "*Multipath routing protocol combined with least hop backup path and packet salvaging for MANETs*," IEEE Pacific Rim Conference on Communications, Computers and Signal Processing, pp. 239-244, 2009.
5. ***Safdar H. Bouk*** and Iwao Sasas, "*Multiple QoS Metrics Gateway Selection Scheme in Mobile Ad Hoc Networks (MANETs)*," International Conference on Emerging Technologies, pp. 446-451, 2009.
4. I-Te Lin, ***Safdar H. Bouk*** and Iwao Sasase, "*Hybrid relaying based cooperative communication with semi-distributed single relay selection*," 12^{th} Symposium on Wireless Personal Multimedia Communications (WPMC'09), pp. 1, 2009.
3. Fudhiyanto P. Setiawan, ***Safdar H. Bouk*** and Iwao Sasase, "*An Optimum Multiple Metrics Gateway Selection Mechanism in MANET and Infrastructured Networks Integration*," IEEE Wireless Communications and Networking Conference (WCMC), pp. 2229-2234, 2008.
2. Hayato Kitamoto, ***Safdar H. Bouk*** and Iwao Sasase, "*High Precision-Predictive Preemptive Ad hoc On-demand Distance Vector Routing in Ad hoc Networks*," 11^{th} International Symposium on Wireless Personal Multimedia Communications (WPMC'08), pp. 1, 2008.
1. ***Safdar H. Bouk*** and Iwao Sasase, "*Energy Efficient and Stable Weight Based Clustering for mobile ad hoc networks*," 2^{nd} International Conference on Signal Processing and Communication Systems, pp. 1-10, 2008.

Patents

1. *Inventors:* Syed Hassan Ahmed, ***Safdar Hussain Bouk***, M. A. Yaqub, and Dongkyun Kim. "CCN 기반의 교통 단속 시스템 및 그 방법 (Traffic Ticketing System Based On Content-Centric Networks)" Filing Date: 07.07.2016, Application Number: 1020160085963.

Tutorials

1. Syed Hassan Ahmed and ***Safdar Hussain Bouk***, “Name Data Vehicular Networks: Challenges, Solutions, and Future Directions,” IEEE CCNC’19, Las Vegas, NV., USA, January 11-14, 2019.

Books and Book Chapters

4. Syed Hassan Ahmed, ***Safdar Hussain Bouk***, Dongkyun Kim, “Content-Centric Networks: An Overview, Applications and Research Challenges,” Springer Briefs in Electrical and Computer Engineering, Springer Singapore, pp. 1-90, 2016.
3. Syed Hassan Ahmed, ***Safdar Hussain Bouk***, Dongkyun Kim, and Mahasweta Sarkar, “Bringing Named Data Networks into Smart Cities,” in the book on ”Smart Cities: Foundations and Principles”, Wiley, pp.275-309, 2016.
2. Syed Hassan Ahmed, ***Safdar Hussain Bouk***, Dongkyun Kim, and Mahasweta Sarkar, “Cyber-Physical Systems: Basics and Fundamentals,” [Invited Book Chapter] in the Book: Cyber-Physical System Design with Sensor Networking Technologies, Edited by Sherali Zeadally, The Institution of Engineering Technology (IET), London, pp. 21-46, 2015.
1. Syed Hassan Ahmed, ***Safdar Hussain Bouk***, Amjad Mehmood, Nadeem Javaid, and Iwao Sasase, “Effect of Fast Moving Object on RSSI in WSN: An Experimental Approach,” [LNCS] Communication in Computer and Information Science 281, pp. 43–51. Springer, Heidelberg, 2012.

Courses Taught

Semester	Undergraduate	Graduate
ODU, Norfolk, VA		
Fall 2023		ECE642 - Computer Networking
Spring 2023		ECE742/842 - Computer Communication Networks
Fall 2022		ECE642 - Computer Networking
DGIST, Daegu, Korea		
Spring 2019	IC522-Computer Communications	IC522-Computer Communications
COMSATS Institute of Information Technology, Islamabad, Pakistan		
Fall 2013	EEE440-Computer Architecture	ETN785-Wireless Medium Access Techniques
Spring 2013	EEE440-Computer Architecture EEE445-Advanced Computer Architecture	ETN686-Emerging Wireless Networks
Fall 2012	EEE440-Computer Architecture EEE445-Advanced Computer Architecture	ETN686-Wireless Sensor Networks
Spring 2012	EEE343-Computer Organization	ECE779-Emerging Wireless Networks
Fall 2011	EEE343-Computer Organization and Architecture	ETN686-Wireless Sensor Networks
Spring 2011		ETN674-Network Management and Operational Network Security

Graduate Supervision and Co-supervision*

Degree	Name	Thesis Title
Ph.D.	Ahmad Naseem Alvi	Delay and Energy Efficient TDMA Based MAC Protocols in Wireless Sensor Networks
M.S.	Ayesha Anjum Butt *	Efficient Utilization of Energy using Fog and Cloud based Environment in Smart Grid
M.S.	Mansoor Mustafa	Multiple Criteria Decision Making based Clustering Technique for WSNs
M.S.	Tauseef Shah	MVC: Modified VIKOR Model based Clustering Protocol for WSNs
M.S.	Aimal Amjad *	Load/Price Forecasting and Demand Side Management in Smart Grids
M.S.	Sahibzada Muhammad Shuja *	Towards an Efficient Consumption of Load by Applying Optimization for Scheduling of Residential Appliances and Forecasting for Price
M.S.	Raza Abid Abbasi *	New Heuristic Approaches for Demand Side Management and XGBoost Based Load Forecasting in Smart Grid
M.S.	Sajjad Khan *	Multi-Objective Home Energy Management System with Multi-Class Appliances using Meta-Heuristic Techniques
M.S.	Muhammad Aslam *	CEEC: Centralized Energy Efficient Clustering Routing Protocol for WSNs
M.S.	Mian Muhammad Sadiq Fareed *	Algorithms for Wireless Body Area Networks: A Survey
M.S.	Azizur Rahim *	Adaptive- Reliable Medium Access Control Protocol for Body Area Networks
M.S.	Adeel Iqbal*	RLEACH (Rectangular Low Energy Adaptive Clustering Hierarchy) based routing protocol for WSNs
M.S.	M. Sajjad Hussain	Neighbor Trust Management based IDS for WSNs
M.S.	Zia ur Rahman	ASHI: A New Energy Efficient Routing Protocol in Wireless Sensor Networks
M.S.	Babar Shahzad	Energy Saving Through Smart Home in Pakistan

In addition to graduate thesis supervision, I had supervised more than 10 undergraduate thesis projects.

Seminar Presentations

- "Cybersecurity and Infrastructure", Wind, Water, & The Warfighter, SAME, VA Post, USA. Dec. 2023
- "Data-Centric Networking for Vehicular Networks", Department of ICE, DGIST, South Korea. Dec. 2017
- "Green Communications", Kyungpook National University, South Korea. Feb. 2014
- "Technology Convergence: The future", Kyungpook National University, Aug. 2013
- "Technology Convergence", Daegu University, South Korea. Aug. 2013