

Dr. Sohail Abbas

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OFFICE

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RESEARCH INTERESTS

- General: Network Security
- Specific: Cooperation Enforcement in Ad hoc Networks, Reputation and Trust based systems, detection of identity-based Attacks (Sybil, masquerading and replication), selfish or misbehavior node detection in routing and in IEEE MAC 802.11 protocols in static and mobile networks as well as in Internet of Things (IoT) environments.

EDUCATION

Liverpool John Moores University, Liverpool UK – [2011]

Ph.D. – Mobile Ad Hoc Network Security

Thesis: “A Layered Security Approach for Cooperation Enforcement in MANET”.

Supervisors: Prof. Madjid Merabti, Dr. David Llewellyn-Jones

University of Peshawar, Pakistan – [2003]

BCS (Hons)– Computer Science

Dissertation: “Network Timer Server for STC, University of Peshawar”.

EXPERIENCE

ASSISTANT PROFESSOR| Department of CS, University of Sharjah

September 2016 – Present

ASSISTANT PROFESSOR| Department of CS & IT, University of Malakand

April 2012 – September 2016

RESPONSIBILITIES

- Chairman/Incharge, Department of Software Engineering

- Teaching at undergraduate (BS) and graduate (MS/PhD) level
- Supervision of MS/PhD students' research projects
- Curriculum design for MS/PhD (Networks courses)

**LECTURER| Department of CS & IT, University of Malakand
March 2005 – March 2012**

RESPONSIBILITIES

- Teaching at undergraduate (BS) level
- Convener, BCS Admission Committee
- Supervision of BS projects

SUBJECTS TAUGHT|

GRADUATE LEVEL

- Wireless Networks
- Advanced Topics in Wireless Networks
- Advanced Network Security
- Theory of Computation
- Advanced Operating Systems
- Communication and Networking

UNDERGRADUATE LEVEL

- Operating Systems
- Programming with Data Structures
- Networking Fundamentals
- Automata Theory & Compiler Construction
- Network Security
- Programming for Engineers

PROFESSIONAL ACTIVITIES

- Department Board Secretary, University of Sharjah (2019-to date)

- Member Accreditation and Curriculum Committee, University of Sharjah (2017-to date)
- Member Students' Recruitment and Publicity, University of Sharjah (2017-to date)
- Coordinator of PhD-CS program Self-study Report, University of Sharjah (2019-2020)
- College Representative of Annual Report Committee, University of Sharjah (2019-2020)
- Examiner Departmental Junior and Senior projects, University of Sharjah (2018-2020)
- Member Committee for program design M.Sc. in Cybersecurity, University of Sharjah (2020)
- Coordinator of Departmental Seminars, University of Sharjah (2017-2019)
- College Representative of Academic Advising Committee, University of Sharjah (2017-2019)
- Representative Think Science, Dubai (2019)
- Judge of University Programming Contest, University of Sharjah (2018)
- Supervisor of University Programming Contest, University of Sharjah (2018)
- Representative UOS Science Open Day, (2018)
- Member of Cyber Quest Competition Committee, University of Sharjah (2017)
- Member of Gulf Programming Competition Committee, University of Sharjah (2016)
- Head of Software Engineering Department, University of Malakand (Apr., 2014 – Sept., 2016)
- Member of MS/M.Phil and Ph.D Admission Committee: (Nov., 2011 – Sept., 2016)
- Member of Board of Studies of various universities of the province, Pakistan (2015-2018)
 - o Department of Software Engineering, University of Malakand, Pakistan (2016-2018)
 - o Department of Computer Software Engineering, UET, Mardan, Pakistan (2016-2018)
 - o Department of Computer Science & IT, University of Malakand, Pakistan (2015-2017)
- Member of Graduate Study Committee, Deptt: of CS & IT, University of Malakand, Pakistan (2015-16)
- Member of various scrutiny committees, University of Malakand, Pakistan (2014-2016)
- Member of Research Evaluation Committee, UET, Peshawar, Pakistan (2016)
- Member of Board of Faculty of IT, University of Malakand, Pakistan (2015-16)
- Member of Institutional Scholarships Award Committee, University of Malakand, Pakistan (2014-15)

RESEARCH & PUBLICATIONS

JOURNALS

1. Farman Ullah, M. Zahid Khan, Haseeb Ur R., **Sohail Abbas**, Foad S Mubarek, "An Energy Efficient and Reliable Routing Scheme to Enhance the Stability Period in Wireless Body Area Networks", Accepted in Computer Communications, Elsevier, October 2020.
2. Sami Ur Rahman, Adnan Khan, **Sohail Abbas**, Fakhre Alam, Nasir Rashid, "Hybrid system for automatic detection of gunshots in indoor environment", Multimedia Tools and Applications, September 2020, DOI: <https://doi.org/10.1007/s11042-020-09936-w>
3. Ahmed M. Khedr, Walid Osamy, Ahmed Salim, **Sohail Abbas**, "A Novel Association Rule-based Data Mining Approach for Internet of Things based Wireless Sensor Networks", IEEE Access, Vol. 8, No. 1, 2020.
4. Thomas Rose, Kashif Kifayat, **Sohail Abbas**, Muhammad Asim, "A Hybrid Anomaly-based Intrusion Detection System to Improve Time Complexity in the Internet of Energy Environment", Journal of Parallel and Distributed Computing, Vol. 145, No. 1, 2020.
5. **Sohail Abbas**, M. Haqdad, Haseeb ur R., M. Zahid Khan, Ajab Khan, Atta Ur Rehman Khan, "Survivability Analysis of Manet Routing Protocols Under DoS Attacks", KSII Transactions on Internet and Information Systems, Vol. 14, No. 9, September 2020.
6. Gulzar Mehmood, Muhammad Zahid Khan, Sohail Abbas, Mohammad Faisal and Haseeb Ur Rahman, "An Energy-Efficient and Cooperative Fault-Tolerant Communication Approach for Wireless Body Area Network" IEEE Access, Vol. 8, No. 1, 2020.
7. **Sohail Abbas**, Madjid Merabti, Kashif Kifayat, Thar Baker, "Thwarting Sybil Attackers in Reputation-based Scheme in Mobile Ad hoc Networks", KSII Transactions on Internet and Information Systems, Vol. 13, No. 12, December 2019, DOI: 10.3837/tiis.2019.12.023.
8. M. Faisal, **Sohail Abbas**, Haseeb Ur R., M. Zahid Khan, Arif Ur R., "An Analysis of DDoS Attacks on the Instant Messengers", Security and Communication Networks, Vol. 2019, 2019.
9. M. Abrar, Alex Tze Hiang Sim, **Sohail Abbas**, "Associative Classification using Automata with Structure based Merging" International Journal of Advanced Computer Science and Applications, 10 (7), 2019.
10. M. Asad, M. Asim, Talha Javed, Mirza O Beg, Hasan Mujtaba, **Sohail Abbas**, "DeepDetect: Detection of Distributed Denial of Service Attacks Using Deep Learning", The Computer Journal (published online), 2019.
11. Fakhre Alam, Sami Ur R., Nasser Tairan, Habib Shah, M. Saeed Abohashrh, **Sohail Abbas**, "An Automatic Medical Image Registration Approach Based on Common Sub-regions of Interest", Journal of Medical Imaging and Health informatics, Vol. 9, No. 2, 2019.
12. Nadeem Abbas, M. Asim, Noshina Tariq, Thar Baker, **Sohail Abbas**, "A Mechanism for Securing IoT-enabled Applications at the Fog Layer", Journal of Sensors and Actuator Networks, Vol. 8, No. 1, 2019.

13. Manar Abu Talib, **Sohail Abbas**, Qassim Nasir, M. Fouzi, “Systematic Literature Review on Internet-of-Vehicles Communication Security”, *International Journal of Distributed Sensor Networks*, Vol. 14, No. 12, 2018.
14. **Sohail Abbas**, M. Faisal, Haseeb Ur R., M. Zahid Khan, Madjid Merabti, Atta ur Rehman Khan, “Masquerading Attacks Detection in Mobile Ad Hoc Networks”, *IEEE Access*, Vol. 6, No. 1, 2018.
15. Gulzar Mehmood, M. Zahid Khan, Haseeb Ur R., **Sohail Abbas**, “An Efficient and Secure Session Key Establishment Scheme for Health-Care Applications in Wireless Body Area Networks”, Published online in *Journal of Engineering and Applied Sciences*, Vol. 37, No. 1, 2018.
16. **Sohail Abbas**, M. Haqdad, Salma Begum, and M. Zahid Khan, “Detecting Sybil Attacks using Heterogeneous Topologies in Static Wireless Sensor Network”, *Journal of Theoretical and Applied Information Technology*, Vol. 96, No. 15, 2018.
17. Djedjiga Mouheb, **Sohail Abbas**, Madjid Merabti, “Cybersecurity Curriculum Design: A Survey”, *Transactions on Edutainment XV*, Springer-Verlag LNCS 11345, pp. 93–107, 2019.
18. M. Faisal, **Sohail Abbas**, Haseeb Ur R., “Identity attack detection system for 802.11-based ad hoc networks”, *EURASIP Journal on Wireless Communications and Networking*, Vol. 2018, No. 5, 2018.
19. Saeed U. Jan, Fawad Qayum, **Sohail Abbas**, Gulam Murtaza Khan, Ajab Khan, Siffat U. Khan, “An improved lightweight privacy preserving authentication scheme for SIP-based-VOIP using smart card”, *Journal of Software Engineering & Intelligent Systems*, Vol. 2, No. 3, 2017.
20. Mazhar Ul Hassan, **Sohail Abbas**, Arshad M., “A Reputation Based Detection Scheme for Securing P2P Home Networked Appliances in HNASS”, *Journal of Computing and Management Studies*, Vol. 1, No. 1, January 2017.
21. Ikram Ali, M. Faisal, **Sohail Abbas**, “A Survey on Lightweight Authentication Schemes in Vertical Handover”, *International Journal of Cooperative Information System*, Vol. 26, No. 1, November 2016.
22. Mohsin Ur R., **Sohail Abbas**, Aftab Alam “Investigating the Effects of Mobility Metrics in Mobile Ad Hoc Networks”, *Asian Journal of Engineering, Sciences & Technology*, p81-87, August 2016.
23. M. Faheem, **Sohail Abbas**, and Sami Khan “An Efficient and Reliable Core-Assisted Multicast Routing Protocol in Mobile Ad-Hoc Network”, *International Journal of Advanced Computer Science and Applications (IJACSA)*, Vol. 7, No. 5, 2016.
24. M. Fayaz, Zia Ur R., Mohsin Ur R., and **Sohail Abbas**, “Effect of Terrain Size and Pause Time on the Performance of Reactive Routing Protocols,” *Jurnal Teknologi*, Vol. 78, No. 4-3, pp. 89-94, 2016.
25. **Sohail Abbas**, Madjid Merabti, and David Llewellyn-Jones, “On the Evaluation of Reputation and Trust based Schemes in Mobile Ad hoc Networks” *Security and Communication Networks*, Wiley publishers, Vol. 8, No. 18, pp. 4041-4052, 2015.
26. **Sohail Abbas**, Madjid Merabti, and David Llewellyn-Jones, “A Lightweight Sybil Attack Detection in MANETs” *IEEE Systems Journal*, Vol. 7, No. 2, pp. 236-248, 2013.

27. Kashif Kifayat, Madjid Merabti, Qi Shi, and **Sohail Abbas**, "COMponent Based SEcURITY System (COMSEC) with QoS for Wireless Sensor Networks" Security and Communication Networks, Wiley publishers, Vol. 6, No. 4, pp. 461-472, 2013.

CONFERENCE PAPERS

28. Mariam Hassan AlThabahi, Manar Abu Talib, **Sohail Abbas**, Essa Basaeed, "A Survey of Emergency Service Facilities Site Selection (ESFSS) Algorithms," Accepted in 14th International Conference on Innovations in Information Technology (IIT), UAE, 2020.
29. Douae Nouichi, M. Abdelsalam, Qassim Nassir, **Sohail Abbas**, "IoT Devices Security Using RF Fingerprinting," in Advances in Science and Engineering Technology International Conferences (ASET), Dubai, UAE, 2019.
30. **Sohail Abbas**, "An Efficient Sybil Attack Detection in Internet of Things", In the 7th World Conference on Information Systems and Technologies (WorldCIST'19), Springer Nature Switzerland, AISC 931, pp. 339–349, Spain, 2019.
31. M. Faisal, **Sohail Abbas**, and Haseeb Ur R., "Multi-dimensional Comprehensive Survey on Denial of Service Attacks with Countermeasures," in World Congress on Internet Security (WorldCIS), IEEE, Cambridge, UK, 2017.
32. Mohsin Ur R., **Sohail Abbas**, and Seemab Latif, "Lightweight Detection of Malicious Nodes in Mobile Ad hoc Networks," in International Conference on Communication Technologies, IEEE, Pakistan, 2017.
33. **Sohail Abbas** and Mohsin Ur R., "Simulation-based analysis of MANET routing protocols using group mobility model," in International Conference on Inventive Computation Technologies (ICICT). vol. 1: IEEE, India, 2016.
34. Mohsin Ur R., Zia Ur R., M. Fayaz, **Sohail Abbas**, and Raees Khan ShahSani, "Performance analysis of TCP/AQM under Low-Rate Denial-of-Service Attacks," in International Conference on Inventive Computation Technologies (ICICT), vol. 3: IEEE, India, 2016.
35. Mohsin Ur R., Aftab Alam, and **Sohail Abbas**, "Investigating the Impacts of Entity and Group Mobility Models in MANETs," in The International conference on Computing, Electronic and Electrical Engineering (ICE Cube), IEEE, Pakistan, 2016.
36. Abdul Salam, **Sohail Abbas**, Yousaf Khan, Sanaul Haq, Saeed Ullah Jan, "Developing the Best Scheduling Algorithm from Existing Algorithms for Real Time Operating Systems," in The First International Conference on Emerging Trends in Engineering, Management and Sciences, Pakistan, 2014.
37. **Sohail Abbas**, Madjid Merabti, and David Llewellyn-Jones, "The Effect of Direct Interactions on Reputation Based Schemes in Mobile Ad hoc Networks," in the 5th IEEE PerNets workshop, in conjunction with IEEE CCNC conference, Nevada USA, 2011.

38. **Sohail Abbas**, Madjid Merabti, and David Llewellyn-Jones, "Identity-based Attacks against Reputation-based Systems in MANETs," in the 12th Annual Conference on the Convergence of Telecommunications, Networking & Broadcasting (PGNet). Liverpool, UK, 2011.
39. **Sohail Abbas**, Madjid Merabti, and David Llewellyn-Jones, "A Survey of Reputation Based Schemes for MANET," in the 11th Annual Conference on the Convergence of Telecommunications, Networking & Broadcasting (PGNet 2010), Liverpool, UK, 2010.
40. **Sohail Abbas**, Madjid Merabti, and David Llewellyn-Jones, "Deterring Whitewashing Attacks in Reputation Based Schemes for Mobile Ad hoc Networks," in the 3rd IFIP/IEEE Wireless Days, Venice Italy, 2010.
41. **Sohail Abbas**, Madjid Merabti, and David Llewellyn-Jones, "A Reputation Based Scheme to Deter Identity Based Attacks for Clustered MANETs," in the 10th Annual Conference on the Convergence of Telecommunications, Networking and Broadcasting, Liverpool, UK, 2009, pp. 243-248.
42. **Sohail Abbas**, Madjid Merabti, and David Llewellyn-Jones, "Signal Strength Based Sybil Attack Detection in Wireless Ad Hoc Networks," in Second International Conference on Developments in e-Systems Engineering (DESE), 2009, pp. 190-195.

RESEARCH PARTICIPATION

CONFERENCE CHAIR & TPC MEMBERSHIP

- Track Co-chair of 16th ACS/IEEE International Conference on Computer Systems and Applications (AICCSA), 2019
- TPC member of the IEEE CCNC conference 2016 - 2019, Nevada, USA
- TPC member of the International Workshop on Big Data Analytics for Sustainable Environments (BDASE), 2018, Zurich, Switzerland
- TPC member of the IEEE VTC 2018, Portugal
- TPC member of IEEE Symposium on Computers & Informatics (ISCI) 2013, Malaysia
- TPC member of IEEE Symposium on Wireless Telecommunications Applications (ISWTA) 2012, Indonesia
- TPC member of the IEEE CCNC conference (WiP) 2012, USA
- TPC member of the 12th International conference of PGNet 2011, UK

WORKING AS A REVIEWER IN JOURNALS

- Reviewer of Security and Communication Networks

- Reviewer IET Wireless Sensor Systems
- Reviewer Arabian Journal for Science and Engineering
- Reviewer Mobile Networks and Applications
- Reviewer International Journal of Electronics and Communications
- Reviewer International Journal of Distributed Sensor Networks
- Reviewer Concurrency and Computation: Practice and Experience
- Reviewer Transactions on Emerging, Telecommunications Technologies
- Reviewer Multimedia Tools and Applications

RESEARCH GROUP MEMBERSHIP

- Member of *OpenUAE Software Engineering & Open Source Research & Development* Group, University of Sharjah, UAE.

RESEARCH PROJECTS SUPERVISION AS MAIN SUPERVISOR

- Supervised two PhD and four MPhil students

FUNDED RESEARCH PROJECTS AS PI / CO-PI

- Location Management for Healthcare Facilities during COVID-19 Pandemic: An Artificial Intelligence Approach**
 - Funding amount: AED 180,800/-
 - Sponsored by University of Sharjah, UAE, 2020-2021.
- Design and Implement Inter Blockchain Communication between Heterogeneous Blockchain Networks**
 - Funding amount: AED 80,000/-
 - Sponsored by University of Sharjah, UAE, 2020-2022.
- Using Artificial Intelligence in Advanced Persistent Threat (APT)**
 - Funding amount: AED 230,000/-
 - Sponsored by Dubai Electricity & Water Authority (DEWA), UAE, 2019-2021.
- Sybil Attack Detection in Internet of Things Environment using Machine Learning**
 - Funding amount: AED 20,000/-
 - Sponsored by University of Sharjah, UAE, 2017-2019.

- An Artificial Immune System Based General Intrusion Detection System**
 - Funding amount: Rs 500,000/-
 - Sponsored by National ICT Research Outreach Program (NIROP), Pakistan, 2012-2013.

A W A R D S

A L I S T O F A C H I E V E D A W A R D S

- Merit Scholarship for the last two semester in BCS (Hons) awarded by Department of Computer Science, University of Peshawar - 2002
- Ph.D. Scholarship under Faculty Development Program from University of Malakand, sponsored by Higher Education Commission (HEC) of Pakistan – 2008