Muhammad Ajmal Azad
SENIOR LECTURER IN CYBER SECURITY

College of Computer Science and Digital Technologies,
Birmingham City University, Birmingham, UK

[CV Last Updated: September 2023]

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▯ Linkedin | Google Scholar

Research Interests

- Telecommunication Security (VoIP, SIP, Identity Spoofing)
- Privacy-Preserving Reputation Systems
- IoT Security & Threat Modelling
- Online Harms

Teaching Interests

- Software Security
- Cyber-Physical System Security
- Security Management
- Advance Network Security
- Risk Assessment & Threat Modelling

Education

- **Ph.D Electrical & Computer Engineering (2016)**
  FACULTY OF ENGINEERING, UNIVERSITY OF PORTO, PORTUGAL
  Thesis:Towards Mitigating Unwanted Calls in Voice Over IP

- **MS Electronics Engineering (2008)**
  FACULTY OF ENGINEERING, INTERNATIONAL ISLAMIC UNIVERSITY, PAKISTAN
  Thesis:Performance Analysis of MPEG4 Video Over DCCP

- **BS Computer Science (2004)**
  FACULTY OF COMPUTER SCIENCE, INTERNATIONAL ISLAMIC UNIVERSITY, PAKISTAN

- **PGCHE – Postgraduate Certificate in Higher Education**
  UNIVERSITY OF DERBY, ENGLAND (2022)

- **Certified in Cyber Security - CC (2023)**
  INTERNATIONAL INFORMATION SYSTEM SECURITY CERTIFICATION CONSORTIUM (ISC)[2]

Academic Appointments

- **April 2022 - to-date: Senior Lecturer in Cyber Security**
  School of Computer Science and Digital Technologies, Birmingham City University, UK

  TEACHING:
  – Software Security (Bsc Level 5)
  – Security of Cyber-Physical Systems (Msc Level 7)
  – Security Attacks and Counter Measures(Bsc Level 5)

  RESEARCH:
  – Research in Telephone Security i.e. Identity spoofing and authentication
  – Security of Next Generation Networks 5G and NGN
  – Trust Management of IoT Network, Privacy-preserving IoT
  – Privacy-preserving reputation aggregation and electronic voting systems

  LEADERSHIP & MANAGEMENT:
  – Course Director for M.sc Cyber Security (July-2023 - todate)
  – Contributing to curricular development
  – Student Supervision in Msc. and Bsc. Projects
  – Supervising 2 PhD Students
  – Member of School's Ethical Committee
  – Research Group Coordinator

- **August 2023 - to-date: Associate Research Fellow**
  Research Institute for Sociotechnical Cyber Security (RISCS)

  RESEARCH:
  – Research in online harms

- **February 2019 - March-2022: Lecture & Senior Lecturer in Cyber Security**
  Department Computer Science, University of Derby, Derby, UK

  TEACHING:
  – Security Management (Bsc Level-6)
  – Risk and Vulnerability Assessment (Bsc Level-6)
  – Network Security (Bsc Level-6)
  – Foundation of Cyber Security (Msc)

RESEARCH:
- Research in Telephone Security i.e. Identity spoofing and authentication
- Security of Next Generation Networks 5G and NGN
- Trust Management of IoT Network, Privacy-preserving IoT
- Privacy-preserving reputation aggregation and electronic voting systems

MANAGEMENT:
- Program Leader Bsc. (Hons) Cyber Security & Bsc.(Hons Digital Forensics) (Since Aug-2020)
- Student Supervision in Msc. and Bsc. Projects
- Supervising 2 PhD Students

- October 2018 - January 2019: Research Fellow in Cyber Security
Department of Computer Science, University of Warkwick, Coventry, UK

RESEARCH:
- Research in Telephone Security i.e. Identity spoofing and authentication
- Security of Next Generation Networks 5G and NGN
- Privacy-preserving reputation aggregation and electronic voting systems

- February 2019 - To-date: Honorary Research Fellow in Cyber Security
Department of Computer Science, University of Warwick, Coventry, UK

RESEARCH:
- Research in Telephone Security i.e. Identity spoofing and authentication
- Security of Next Generation Networks 5G and NGN
- Privacy-preserving reputation aggregation and electronic voting systems

- August 2016 - September-2018: Research Associate in Cyber Security
School of Computing Science, Newcastle University, Newcastle, UK

RESEARCHER IN CYBER SECURITY:
- Developing models for the Privacy-Aware reputation aggregation and collaborative security.
- Develop a system for the privacy-preserving web analytics and decentralized e-voting.
- Fraud and spam detection in a Telecommunication and VoIP network.

- February 2012 - June-2016: Early Stage Researcher
INESCTEC & University of Porto [FCT Funded], Porto, Portugal

PhD RESEARCH IN VoIP SECURITY:
- Proposed methods for Identifying spammers,robocalls in a VoIP telephony and Telecommunication network.
- Investigated ways for the privacy preserving collaboration .
- Investigated ways for connecting identities that belong to one physical person
- Developed models for generating and analyzing synthetic CDRs.
- Developed models for social network analysis.

- February 2010 - February-2012: Researcher
INESCTEC & University of Porto, Portugal

RESEARCH:
- Investigated management of next generation network anaomaly detection
- Investigated application of machine learning for Internet traffic classification.

Industry Experience

- February 2006 - February-2010: Manager Networks
The Right Connection, Multinet, Islamabad, Pakistan

MANAGEMENT AND SECURITY OF LARGE VoIP AND IP NETWORK:
- Designed and managed VoIP based LDI voice network for Multinet.
- Designed and managed VoIP based FLL network of Multinet.
- Managed Network operation center for Multinet consisting of 14 telecom regions.
- Assist Management in all technical operational matters and trained network management team.
- Protecting Network from security threats and misuse of network resources.
- Procurement of Network devices and software systems.
- Management of Human Resources and Network Operation center.

Selected Publications

For full published articles, please visit: `https://sites.google.com/site/majmalazad/publications`

Journals :

- Shen Wang, Mahshid Delavar, Muhammad Ajmal Azad, Farshad Nabizadeh, Steve Smith, Feng Hao
  Spoofing Against Spoofing: Towards Caller ID Verification In Heterogeneous Telecommunication Systems
  ACM Transactions on Privacy and Security, ACM TOPS (Minor Revision)

- Muhammad Ajmal Azad, Junaid Arshad, Farhan Riaz
  ROBO-SPOT: Detecting Robocalls by Understanding User Engagement and Connectivity Graph
  IEEE Big Data Mining and Analytics, 2023

- Haitham Mahmoud, Muhammad Ajmal Azad, Junaid Arshad and Adel Aneiba
  A Framework for Decentralised, Real-time Reputation Aggregation in IoV
  IEEE Internet of Things Magazine, 2023

- Muhammad Ajmal Azad, Farhan Riaz, Anum Aftab, Syed Khurram Rizvi, Junaid Arshad, Hany Atlam
  DEEPSEL: A Novel Feature Selection for Early Identification of Malware in Mobile Applications

Elseveir Future Generation Computer Systems,2021

– Monzir Babiker Mohamed, Olasunkanmi Matthew Alofe, Muhammad Ajmal Azad, Harjinder Singh Lallie, Kaniz Fatema, and Tahir Sharif
A Comprehensive Survey on Secure Software defined Network for the Internet of Things
IET Transactions on Emerging Telecommunications Technologies, 2021

– Syed Khurram Rizvi, Muhammad Ajmal Azad and Moazam Faraz
Spectrum of Advancements and Developments in Multidisciplinary Domains for Generative Adversarial Networks (GANs)
Springer Archives of Computational Methods in Engineering, 2021

– Muhammad Ajmal Azad, Farhan Riaz, Anun Farhan, Syed Khurram Rizvi, Junaid Arshad
DEEPSEL: A Novel Feature Selection for Early Identification of Malware in Mobile Applications
Future Generation Computer Systems (Minor Revision), 2021

– Samiran Bag, Muhammad Ajmal Azad and Feng Hao
DRE based cumulative e-voting scheme without tallying authorities,
International Journal of Applied Cryptography,2021

– Muhammad Ajmal Azad, Juanid Arshad, Akmal Ali, Farhan Riaz, Sidra Abdullah, Muhammad Imran, and Farhan Ahmad
First Look at Privacy Analysis of COVID-19 Contact Tracing Mobile Applications
Accepted in IEEE The Internet of Things Journal, 2020

– Muhammad Ajmal Azad,, Charith Perera, Mahmoud Barhamgi, Feng Hao
Privacy-preserving Crowd-sensed trust aggregation in the User-centeric Internet of People Networks
ACM Transactions on Cyber Physical Systems, 2020

– Muhammad Ajmal Azad,Samiran Bag,Farhan Ahmad Feng Hao
Sharing is Caring: A Collaborative Approach for Sharing Firewall Alerts
Elsevier Computer Communications 2020.

– Shazia Tabassum, Muhammad Ajmal Azad, and João Gama
Profiling High Leverage Points for Detecting Anomalous Users in Telecom Data Networks
Springer Annals of Telecommunications,2020

– Geetanjali Rathee, Farhan Ahmad, Fatih Kurugollu, Muhammad Ajmal Azad, Razi Iqbal, and Muhammad Imran
RT-BIoV: A Cognitive Radio Technique for Blockchain-enabled Internet of Vehicles
IEEE Transactions on Intelligent Transportation Systems,2020

– Muhammad Ajmal Azad,Samiran Bag,Feng Hao, Andrii Shalaginov
Decentralized Self-enforcing Trust Management System for Social Internet of Things
IEEE The Internet of Things Journal, 2020

– Junaid Arshad, Muhammad Ajmal Azad,Roohi,Mamoun Alazab, Razi Iqbal, Khaled Salah
A Performance, Energy and Privacy Analysis of Intrusion Detection Systems for IoT
MDPI ELECTRONICs, 2020

– Muhammad Ajmal Azad, Mamoun Alazab, Farhan Riaz, Junaid Arshad, Tariq Abdullah
Socioscope: I Know Who You Are, A Robo, Human Caller or Service Number,2019
Elsevier Future Generation Computer Systems, 2019

– Muhammad Ajmal Azad,Samiran Bag, Charith Perera, Mahmoud Barhamgi, Mahmoud Barhamgi,Feng Hao
Authentic-Caller: Self-enforcing Authentication in a Next Generation Telecommunication Network
IEEE Transactions on Industrial Informatics,2019

– Charith Perera, Mahmoud Barhamgi, Arosha K. Bandara, Muhammad Ajmal Azad
Designing Privacy-aware Internet of Things Applications
Elsevier Information Systems Journal,2019.

– Mohammad Aamir Ali, Muhammad Ajmal Azad, Mario Parreno Centeno, Feng Hao, Aad Van Moorsel
Consumer-Facing Technology Fraud: Economics, Attack Methods and Potential Solutions
Elsevier Future Generation Computer Systems, 2019

– Muhammad Ajmal Azad,Samiran Bag, Simon Parkinson, Feng Hao
TrustVote: Privacy-Preserving Node Ranking in Vehicular Networks
IEEE Internet of Things Journal,2019

– Samiran Bag, Muhammad Ajmal Azad, Feng Hao
   PriVeto: A Fully Private Two Round Veto Protocol
   IET Security, 2019

– Muhammad Ajmal Azad, Junaid Arshad, Shazia Mahmoud, Khaled Salah, Muhammad Imran
   A Privacy-preserving Framework for Smart Context-aware Healthcare Applications
   Transactions on Emerging Telecommunications Technologies, 2019

– N.Nizamuddin,Khaled Salah, Muhammad Ajmal Azad, Junaid Arshad, Habib Ur Rehman
   Decentralized Document Version Control using Ethereum Blockchain and IPFS
   Elsevier Computer and Electrical Engineering, 2019

– Nader Sohrabi Safa, Carsten Maple, Steven Furnell, Muhammad Ajmal Azad, Charith Perera, Mehdi Sookhak, M. Dabbagh
   Deterrence and Prevention-based Model to Mitigate Information Security Insider Threats in Organisations
   In Future Generation Computer Systems,2019

– Farhan Riaz, Muhammad Ajmal Azad, Junaid Arshad, Muhammad Imran, Saad Rehman
   Pervasive blood pressure monitoring using Photoplethysmogram (PPG) Sensor
   Elsevier Future Generation Computer Systems,2019

– Junaid Arshad, Muhammad Ajmal Azad, Khaled Salah, Razi Iqbal, Muhammad Imran Tariq, Tariq Umer
   Performance Analysis of Content Discovery for Ad-hoc Tactile Network
   Elsevier Future Generation Computer Systems, 2018

– Muhammad Ajmal Azad,Samiran Bag, Feng Hao, Khaled Salah
   M2M-REP: Reputation System for Machines in the Internet of Things
   Elsevier Computers & Security, 2018.

– Junaid Arshad, Muhammad Ajmal Azad, Mohammad.A. Latif, Habib Ur Rehman, Khaled Salah
   COLIDE: A Collaborative Intrusion Detection Framework for Internet of Things
   IET Networks, 2018.

– Muhammad Ajmal Azad, Samiran Bag, Feng Hao
   PrivBox: Verifiable Decentralized Reputation System for the On-line Marketplaces
   Elsevier Future Generation Computer Systems, 2018.

– Samiran Bag, Muhammad Ajmal Azad, Feng Hao
   A Privacy-aware Decentralized and Personalized Reputation System
   Elsevier Computers & Security, 2018.

– Muhammad Ajmal Azad, Ricardo Morla,Khaled Salah
   Systems and Methods for SPIT Detection in VoIP: Survey and Future Directions
   Elsevier Computers & Security, 2018

– Muhammad Ajmal Azad, Junaid Arshad, Farhan Riaz
   [Book-Chapter] SOCIO-LENS: Spotting Unsolicited Caller Through Network Analysis
   Book Chapter in Guide to Vulnerability Analysis for Computer Networks and Systems, 2018

– Muhammad Ajmal Azad,Samiran Bag, Shahzia Tabassum,Feng Hao
   privy: Privacy Preserving Collaboration Across Multiple Service Providers to Combat Telecom Spams
   IEEE Transactions on Emerging Topics in Computing, 2017.

– Muhammad Ajmal Azad, Ricardo Morla
   Rapid Detection of Spammers through Collaborative Information Sharing across Multiple Service Providers
   Elsevier Future Generation Computer Systems, 2018.

– Muhammad Ajmal Azad, Ricardo Morla
   Early Identification of Spammers Through Identity Linking, Social Network and Call Features
   Elsevier Journal of Computational Sciences,2016.

– Muhammad Ajmal Azad, Ricardo Morla,Junaid Arshad
   Clustering VoIP Caller for SPIT Identification
   Wiley Journal of Security and Communication Networks,2016.

– Muhammad Ajmal Azad, Ricardo Morla
   Caller-REP; Detecting unwanted Calls with Caller Social Strength

Elsevier Computers & Security, 2013.

– Junaid Arshad, Muhammad Ajmal Azad, Imran Ali Jokhio, Paul Townend
Intrusion damage assessment for multi-stage attacks for clouds
IET Communications, 2013.

Peer Reviewed Conferences & Workshops:

– Samiran Bag, Muhammad Ajmal Azad, Feng Hao
E2E Verifiable Borda Count Voting System without Tallying Authorities
14th International Conference on Availability, Reliability and Security (ARES), 2019.

– Muhammad Ajmal Azad, Samiran Bag, Feng Hao
M2M-REP: Machine To Machine Reputation in the Internet of Things
12th International Conference on Availability, Reliability and Security (ARES), 2017.

– Muhammad Ajmal Azad, Samiran Bag
[C] Decentralized Privacy-Aware Collaborative Filtering of Smart Spammers in Telecommunication Network
32nd ACM/SIGAPP Symposium On Applied Computing (SAC-SEC), 2017.

– Muhammad Ajmal Azad, Khurram Rizvi
Caller Centrality: Identifying Telemarketers in VoIP Network
11th International Conference on Availability, Reliability and Security (ARES-2016), 2016.

– Muhammad Ajmal Azad, Ricardo Morla
ID-CONNECT: Combining Network and Call Features to Link Different Identities
The 18th IEEE Conference on Computational Science and Engineering (18th IEEE CSE, Privacy, Trust and Security Track), 2015.

– Muhammad Ajmal Azad, Ricardo Morla
Mitigating SPIT with Social Strength
The 11th IEEE International Conference on Trust, Security and Privacy in Computing and Communications (TrustCom), 2012.

– Muhammad Ajmal Azad, Ricardo Morla
[C] Multistage SPIT detection in Transit VoIP
The 19th International Conference on Software, Telecommunications and Computer Networks (SoftCOM), 2011.

For full published articles, please visit: `https://sites.google.com/site/majmalazad/publications`

REF Publications

– Charith Perera, Mahmoud Barhamgi, Arosha K. Bandara, Muhammad Ajmal Azad
Designing Privacy-aware Internet of Things Applications
Elsevier Information Systems Journal,2019.

– Muhammad Ajmal Azad,Samiran Bag, Simon Parkinson, Feng Hao
TrustVote: Privacy-Preserving Node Ranking in Vehicular Network
IEEE Transactions on Internet of Things,2018

– Muhammad Ajmal Azad, Samiran Bag, Feng Hao
PrivBox: Verifiable Decentralized Reputation System for the On-line Marketplaces
Elsevier Future Generation Computer Systems, 2018.

– Muhammad Ajmal Azad,Samiran Bag, Feng Hao
privy: Privacy Preserving Collaboration Across Multiple Service Providers to Combat Telecom Spams
IEEE Transactions on Emerging Topics in Computing, 2017.

– Muhammad Ajmal Azad, Ricardo Morla
Rapid Detection of Spammers through Collaborative Information Sharing across Multiple Service Providers
Elsevier Future Generation Computer Systems, 2018.

Fundings

- **EU-Ontochain**, Decentralized Reputation System for Online Market Places, (Co-PI, total funding **€123,000**).

- **EPSRC**, Spoofing Identification in Heterogenous Telecommunication Network (External Collaborator with Prof Feng Hao, University of Warwick (total funding **£1 million**)).

- **Innovate UK & RDS Global**, Data Integration and Intelligence Developer (Academic Supervisor, total funding **£284,000**).

- **FCT- Portuguese Science Foundation**, Towards Mitigating Spam in Voice Over IP (PI, total funding **€60,000**)

- **PETS-Conference**, Travel support for 2018 PETS(PI, total funding **$1000**)

Relevant Skills

- **Network tools:** tcpdump,wireshark,snort/bro,jnetpcap,NMAP,NESUSS,Kali Linux,OPENVAS,Packet-tracer,Mutillidae,Metasploit,ZAP and Damn Vulnerable Web Application (DVWA) etc. Microsoft Threat Assessment
- **Computer Languages:** Java, Java Script, C++, SQL
- **Big Data:** Hadoop, MapReduce
- **Software:** R, Matlab,Weka (machine-learning),LATEX (typesetting)
- **Social Networks:** Social Network Analysis tools: igraph, sna, jung
- **Operating Systems:** UNIX/Linux, and Windows Operating Systems
- **Methodologies:** Qualitative Analysis, Statistics, Machine Learning, Reverse Engineering, Digital Communications, Program Analysis, Network Analysis, Cryptography,

Supervision

- PhD:
- Olasunkanmi Matthew Alofe (Supervised for Two years)
- Muhammad Sadiq Hassan Zada (Co-supervisor with Bo Yuan (supervised for two years))
- Moeez Subhani (Co-supervision with Stephan Reiff-Marganiec)

Service

- Conference Chair:
- 2023: Flagship Blockchain Conference: International Workshop on Blockchain Security and Scalability(BSS2023-China)
- 2022: Flagship Blockchain Conference: International Workshop on Blockchain Security and Scalability(BSS2022-Finland)

- Editorial Board:
- Associate Editor Wiley Security and Communications Networks (2014-2016)

- Journal Reviewer:
- IEEE Transactions on Networks and Service Management
- ACM Transactions on Distributed Ledger
- IEEE Transactions on Dependable and Secure Computing
- ACM Transaction of Knowledge Engineering and Discovery
- IEEE Transactions on Consumer Electronics
- IEEE Transactions on Parallel and Distributed Computing
- Elsevier Future Generation Computer Systems
- IEEE Communication Magazine
- IEEE Access
- Elsevier Computers and Security
- Springer Telecommunication Systems
- Springer Mobile Networks and Applications
- IET Communication
- IET Networks
- Wiley Communication Systems
- Wiley Communication and Security
- Elsevier Electrical and Computer Engineering
- International Journal of Network Management
- International Journal of Software Evaluation

- TPC Member:
- IEEE-ICC (2020, 2021,2022, 2023,2024)
- PETS 2019 (External Reviewer)
- IEEE-GLOBECOMM (2018,2019,2020,2021,2022,2023,2024)
- Wireless Days 2018(Track on IoT and smartX: Networking, Cloudification and Services)
- ACM SAC 2018
- FTC 2017
- IFIP-SEC (iNET workshop) 2017
- ACNS 2017 (External)
- ASIACCS 2017 (External)
- IEEE ICC-2017
- ACM SAC-2017
- FTC 2016
- IEEE Cloudna 2016

- Grant Reviewer and Evaluator:
- EPSRC (2023)
- Qatar Science Foundation (2023)
- HEC Pakistan (2022)
- External PhD Evaluator (University of Wolverhampton)
- External PhD Evaluator (University of Derby)
- External PhD Evaluator (NUST, Pakistan)
- External PhD Evaluator (NED Karachi)
- Evaluator Malta's Further & Higher Education Authority (2019,2021,2022,2023)

Teaching

Semester	Module	Class Size
	Birmingham City University	
Spring-2023	Cyber Physical Systems Security	45 Students
Fall-2022	Software Security	85 Students
Summer-2022	Cyber Physical Systems Security	60 Students
	University of Derby	
Fall-2021	Security Management	26 Students
Fall-2021	Vulnerability Management	26 Students
Spring-2022	Network Security	7 Students
Fall-2020	Security Management	10 Students
Fall-2020	Vulnerability Management	10 tudents
Spring-2021	Network Security	12 Students
Fall-2019	Security Management	8 Students
Fall-2019	Vulnerability Management	8 Students
Spring-2020	Network Security	12 Students