Md Asef Jawad

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Research Interests

- Next-Generation Wireless Networks and 6G Communication Systems
- Internet of Things (IoT) and Edge-Intelligent Network Architectures
- AI-Native Wireless Communication and Intelligent Network Control
- Wireless Network Security, Trustworthy AI, and Next-Generation Cybersecurity
- Cross-Layer Optimization, Resource Allocation, and Learning-Based Radio Resource Management

Research Publications and Ongoing Work

- Optimized Bandwidth Allocation in Cellular Networks Using Genetic Algorithms and a Historical Stability Index — *ICNGN Conference 2025, Singapore*
- SoK: AI-Driven Security Threats in 6G — *3rd ASENS Conference 2026, China*
- A Comparative Survey of IoT Platforms: Architecture, Security, and Emerging Trends Toward Distributed Intelligence — 8th ICHORA 2026, IEEE Turkey Section
- A Runtime Safety Copilot for AI-Native O-RAN: Predictive Verification and Fail-Safe Enforcement in Near-RT RIC Control Loops — IEEE Access

Education

Master of Networking Technology — Sept 2023 – April 2026
Carleton University — *Ottawa, ON*

Bachelor of Computer Science — Jan 2020 – May 2022
Dalhousie University — *Halifax, NS*

Technical and Soft Skills

Languages: Java, Python, C/C++, SQL, JavaScript, HTML/CSS, R
Scripting: Bash, Python
Tools: Wireshark, NS3
Microsoft O365: Word, PowerPoint, SharePoint, Outlook, Survey, OneDrive, Excel
Protocols : DHCP (DORA), ARP, IGMP, DNS, SNMP, RIP, HTTP, UDP, EAPOL, 802.11 etc.
Communication: Teams, Cisco WebEx, JIRA, Confluence
Soft Skills : Independent, Team-Player, Micro-management, Problem-Solving

Professional Experience

Technical Support Assisstant (Testing) — Sep 2023 – Dec 2023
Taxtron Inc — *Toronto, ON*

- Proficient in C++, Java, and Python, with strong foundations in object-oriented design, data structures, algorithms, and developing optimized, scalable software solutions.
- Developed and executed Python-based automated test scripts within existing automation infrastructures to improve testing efficiency and reliability.
- Designed and developed comprehensive test plans and test cases following Agile methodology; experienced in **Blackbox/Whitebox** testing, **Unit** Testing (Java–IntelliJ), **Regression** Testing, and **Manual** Case Execution.
- Set up environments and test configurations to replicate real-world network conditions, validate system behavior, and ensure robustness under load, stress, and **KPI** performance scenarios.
- Utilized traffic generation and network analysis tools such as **Ixia** and CMD for performance, load, and stress testing across distributed systems.
- Hands-on experience with machine learning workflows, including data preprocessing, feature engineering, model training, evaluation, and optimization using algorithms such as SVM, Decision Tree, Random Forest, Naive Bayes, KNN, K-Means Clustering, and Linear Regression.

Network Specialist — Jan 2023 – June 2023
Bell Canada — *Ottawa, ON*

- SSH into different types of modems and configured various parameters in the TR-181 (TR-69) data model for different QA testing in both Wired and Wireless regression.
- Hands-on experience working with **DHCP (DORA), ARP, IGMP membership join/leave for multicast, 802.11 Broadcast Beacon frames, EAPOL, QoS DSCP mapping.**
- Configured UPnP Port Forwarding rule manually from Modem UI and verified that there's a port forwarding rule for connected devices so it can contact the main CSMF server.
- Collected traces for a bug and investigated modem logs and system logs for the reason of the bug, and got OTA captures in different frequency channels to grab the root cause.
- Managed inventory of IT assets, handled e-waste processes, and maintained accurate tracking of equipment.
- Installed and troubleshot end-user hardware, including printers, scanners, label makers, and peripheral devices.
- Configured L2/L3 switch for port mirroring ports to grab bugs from a connected device on another port.
- Bash Scripted a program to find a bug in user 'Merlin STBs' across the country to identify the bug and fix it with a suitable replacement solution to prevent the STBs from behaving differently.
- Did **Wi-Fi interference** and **bandwidth testing** for Radio 2.4 GHz, 5 GHz, and 6 GHz on various APs Wi-Fi channels and monitored if IPTV service was not impacted due to heavy traffic.
- Did **Wireshark** Packet Analysis and **tcpdump** on modem LAN/WAN side for packet analysis.

Projects

- **AI-Native Radio Resource Management for 6G Networks**
  Developed an AI-driven radio resource management framework for beyond-5G/6G networks, leveraging reinforcement learning to optimize spectrum allocation, power control, and user scheduling in dynamic wireless environments. Modeled heterogeneous network conditions and evaluated performance using NS-3 simulations, achieving improvements in spectral efficiency, latency, and QoS provisioning.
- **O-RAN Intelligent Control using Near-RT RIC**
  Designed and implemented an AI-assisted control application (xApp) within the O-RAN near-real-time RIC architecture for adaptive network optimization. Integrated telemetry data from simulated RAN environments and applied machine learning models for traffic prediction and anomaly detection. Demonstrated closed-loop control for dynamic policy enforcement and improved network stability under varying load conditions.
- **Edge-Intelligent IoT over 5G with Network Slicing**
  Built a 5G-enabled IoT system incorporating edge intelligence and SDN-based network slicing to support latency-sensitive and massive IoT services. Implemented MQTT-based communication and deployed traffic-aware slicing policies using OpenFlow and Mininet. Evaluated end-to-end latency, reliability, and resource utilization, demonstrating efficient support for heterogeneous IoT workloads in next-generation wireless systems.

Certifications

- Microsoft Certified: Azure Fundamentals – Microsoft, Apr 2024
- AWS Academy Cloud Foundations – Amazon Web Services (AWS), Apr 2024
- AI For Everyone – DeepLearning.AI, Nov 2023
- Introduction to Cybersecurity – Cisco, Sep 2023
- Google Cybersecurity Certificate – Google, Sep 2023
- Networking Basics – Google, Jul 2023
- Security, Compliance, and Identity Fundamentals – Microsoft, Jun 2023
- Foundations of Cybersecurity – Google, Jun 2023
- Operating Systems and You – Google, May 2023
- Technical Support Fundamentals – Google, May 2023
- Intro to Cybersecurity Tools and Attacks – IBM, Apr 2023