Moshiur Rahman

Curriculum Vitae

Summary

A skilled engineer with specific focus on using data analytics and machine learning for gaining data-driven insight into 5G networks and applications, more specifically connected and autonomous vehicles.

Relevant Experience

- Vehicle telematics systems design;
- Machine Learning, Deep Learning, Computer Vision;
- 5G RAN, CN and OAM network architecture,
- Strong programming skills in Python, C++;
- Hands-on experience with Scikit-learn, Tensorflow, Keras, PyTorch, Numpy, Pandas, OpenCV. My personal projects on machine learning can be found in ***my github profile***;
- Hands-on experience with cloud computing (OpenStack) and container (Docker, Kubernetes) technologies;
- Building proof-of-concept projects in the area of cloud computing, Software Defined Networking (SDN) and IoT.
- Experience with network simulators: Mininet, NS3, GNS3.
- In-depth knowledge on TCP/IP, routing and switching protocols. Hands-on experience with routers, switches from different vendors.

Experience

Aug, 2019 - Present

Connectivity Systems Engineer, *Ford Motor Company*, Ottawa.

- End-to-end system design architect for connected and non-connected vehicle features with particular focus on in-vehicle infotainment (IVI) systems and CV2X.
- Take feature specifications(WHAT) from feature owners and translate them to system requirements (HOW) to be delivered by IVI software teams.
- Research relevant standard specifications and best practices.
- Drive vehicle feature implementation through Agile process.
- Research on autonomous vehicle (self driving car) perception, e.g., object classification, tracking, semantic segmentation, sensor fusion.

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Nov, 2017 - Aug, 2019 **Senior Engineer**, *Huawei Technologies Canada*, Ottawa.

- Research on big data analytics and machine learning technologies for network management and orchestration.
- Devised novel data analytics management framework for 5G networks (patent pending).
- Devised capacity and coverage optimization techniques for 5G networks (patent pending).
- Devised multi-level intent driven network management techniques (patent pending).
- 5G RAN-centric data collection and analytics; enhanced network automation for 5G core network using network data analytic function (NWDAF); management data analytics (MDA) and self-organizing network (SON) for 5G OAM networks.
- - Actively contributed to the 5G 3GPP SA5 standard specifications (TS 28.533, TS 28.552, TS 28.554, TR 28.812, and TR 28.861).
- I was a delegate to the 3GPP SA5 standard meetings.

May, 2016-Nov, 2017 **Solution Architect/ Cloud Services Engineer**, *Center of Excellence in Next Generation Networks (CENGN)*, Ottawa.

- Solution architect for proof-of concept projects in the areas of emerging networking technologies such as cloud computing, SDN/NFV and IoT.
- Lead a team of cloud services engineers and interns.
- Technical interface for CENGN customers for formulating the network architecture and system design required for PoC projects.
- Deployed OpenStack-based cloud computing platform using Mirantis distribution.
- Integrated Wind River's Titanium Edge Cloud platform with an OpenStack-based production cloud platform.
- Deployed a virtual evolved packet core (vEPC) using Rancher's Kubernetes distro.
- Integration of Atrium SDN router in an OpenStack-based cloud platform.
- Created technical deliverables, e.g., project reports, white papers and other technical documents.
- Participate in writing funding proposals for various government projects. One of the funding proposals for building an Ontario-wide cloud-based network received more than $63 million from the government of Ontario.

2015–2016 **Wireless Researcher (intern)** , *Huawei Technologies Canada*, Ottawa.

Research and development on 5G radio access networks. I had built a system-level simulator for research in 5G cellular networks, specifically for full duplex (FD) transmission systems. Developed scheduling algorithm for C-RAN and D-RAN deployment of FD networks.

2011–2015 **Research Assistant**, *ETS, University of Quebec*, Montreal.

Developed novel architectural frameworks for wireless access network virtualization and also analyzed the frameworks from a techno-economic perspective. Studied differentiated service provisioning in a heterogeneous wireless network environment using SDN paradigm. Developed SDN applications for virtualization, traffic offloading and load balancing using Python-based SDN controller platform.

2010–2011 **Research Intern**, *INRS-EMT, University of Quebec*, Montreal.

Developed hybrid automatic repeat request (HARQ) algorithms for 4G networks.

2008–2008 **Network Engineer**, *Orascom Telecom Bangladesh Ltd (Banglalink)*, Dhaka.

Ensured 99.999% uptime for the mobile core network. Main responsibilities involved installation, configuration and maintenance of Cisco and Huawei routers and switches that constituted the mobile core network.

2007–2008 **System Engineer**, *National Telecom Ltd, Bangladesh*, Dhaka.

Ensured 99.99% uptime for the packet backbone network that consisted of Huawei NetEngine routers. I also managed the corporate IT infrastructure that consisted of Cisco routers, switches, firewalls and different Linux-based application servers.

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2005–2007 **Project Engineer**, *Telecon International, Bangladesh*, Dhaka.
I led a team of engineers and technicians for refurbishing mobile access network equipment e.g., radio base stations (mainly Ericsson RBS), microwave transmission nodes (from Ericsson, Siemens,and NEC).

Publications

I have extensive experience in writing technical and scientific articles. A list of my published articles is available in my ***Google Scholar*** profile.

Skills and Expertise

Software Development and Tools

- Programming languages: Python, C/C++, R, SQL;
- Machine learning and data analytics: Scikit-learn, Tensorflow, Keras, PyTorch, Numpy, Pandas, OpenCV;
- Analytical modeling: Matlab;
- Atlassian tools suite: Jira, Confluence;
- Developed different web-based games using Python programming language. My github profile has codes for some of the ***developed games***.

Networking

- Experienced in OpenStack, Docker and Kubernetes;
- Strong knowledge and hands-on experience with software defined networking (SDN) and OpenFlow paradigm;
- Experienced in developing SDN controller applications using POX, Pyretic;
- In depth knowledge of TCP/IP protocol stack and routing protocols: IGP, BGP, OSPF, MPLS;

Education

2011–2016 **Ph.D. in Electrical Engineering**, *ETS, University of Quebec*, Montreal, Canada.

2008–2011 **MSc in Telecommunications Engineering**, *University of Trento*, Trento, Italy.

2000–2005 **BSc in A.P. Electronics and Communications Engineering**, *University of Dhaka*, Dhaka, Bangladesh.

Professional Certifications

2019 **Intel Edge AI Nanodegree Program**, *On going*.

2016 **ONF Certified SDN Associate (OCSA)**, *SDN10138*.

2014 **Coursera online course**, *Software Defined Networking (SDN)*, School of Computer Science, Georgia Institute of Technology, Atlanta, USA.

2008 **Cisco Certified Network Associate (CCNA)**, *ID:CSCO11481373*.

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