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EDUCATION

University at Buffalo (UB), The State University of New York **GPA 3.29/4.0** **Feb 2017**
Master of Science, Computer Science, Major Concentration – *Distributed & Networked Systems*, Graduate Certificate - *Information Assurance*

Chitkara University, India **GPA 7.98/10** **August 2012**
Bachelor of Engineering, Computer Science Engineering

TECHNICAL SKILLS

Programming: C, C++, UNIX Network Programming, Java, VB, C#, **Scripting & Automation:** Python, Perl, Ruby, Shell
Operating Systems: Windows, Mac, Unix, Cisco IOS, VM **Web Technologies:** Solr, HTML/CSS/JS, XML, Apache, JSON
Networking: BGP, OSPF, EIGRP, ATM, PPP, MPLS, STP, RSTP, VTP, VLANs, CDP, HSRP, VRRP, GLBP, TCP/IP, DNS, UDP, VoIP, QoS, LACP, PAgP, SNMP
Security: RADIUS, TACACS+, AAA, IPSec, BGPSec, Snort, VPN, Basic Firewalls, CompTIA Security+, CCNA Security
CCNA, Validity: May 2018, License – 407764170287FQYL **CCNP**, Validity: May 2018, License – 421344169061IRXN
Network Platforms: VMware NSX, SDN and OpenFlow, Cisco Nexus 1K, 2K, 5K and 7K, Cisco 3725, 3640, Catalyst - 2960-X, 3750, 3850, 6513, 2950T-48, Compact – 3560,2960
Tools: Xcode, Intelli J, Android Studio, Secure CRT, Wireshark, Cisco SDM, Matlab, Windows Active Directory, Microsoft Visio, Versioning – Git, SVN

CAREER SUMMARY

Graduate Researcher, UB Wireless Networks and Systems Lab, The State University of New York **May 2016 – Present**
- Working towards analyzing Network Performance using smartphones by collecting data pertaining to Cellular and Wireless Networks using Android Application Development.

Network and Systems Engineer, Tech Mahindra Ltd., Noida, India **June 2013 – July 2015**
- Assisted AT&T's network for Customer Ordering and Billing applications outsourced to Tech Mahindra. Involved in:
  1. Suggesting network design improvements involving BGP metric tweaking and load balancing based on BGP Policies.
  2. Router (3725, 3640) and Switch (3750, 6513, 2950) Configuration and troubleshooting solutions for advanced OSPF.
  3. Network troubleshooting and monitoring using AOTS ticketing system, Server side logs, Unix, Python and Perl automation scripting.

Software Engineer, Tech Mahindra Ltd., Noida, India **June 2013 – July 2014**
- Developed and shaped a mainframe screen scraping application for AT&T's Wholesale Ordering and Billing Solutions in VB .NET. Was involved in code design and review, system deployment and support, business requirements and project estimates.

Network Engineer Intern, Bharti Airtel, Chandigarh, India **Aug 2011 – Feb 2012**
- Designed the network for the enterprise, addressing needs like designing a fully redundant highly available L3 design by deploying HSRP and GLBP, Router Security: Zone-based firewalls, RADIUS and TACACS+, Switch Security: VACLs, port security and dot1x authentication.

PROJECTS

CelNetMon **[Google Protocol Buffers, Cellular Networks, Android, Java, Python, Django, SQLite]**
- Designed and developed an Android application in Java that helps in Cellular Network Performance Analysis. The application is being used in an on-going research project at UB Wireless Networks and Systems Lab and is capable of:
  1. Provisions registering your device to a Django based web server followed by periodic uploading of the serialized data using Google Protocol Buffers and provisions viewing analysis reports on your device in the form of CSV files.
  2. Tracking your geographical location using wireless and cellular networks thus optimizing battery performance. Monitoring other cellular network parameters such as RSSI, network type, network state, data activity and data state as you move around.

BGP Traffic Behavior **[Cisco IOS, BGP, c3600 and c3700 platforms]**
- Completed research assignments on BGP traffic behavior, laying down important conclusions about how BGP behaves:
  1. Simulated network environment consisting of 5+ Autonomous systems on Cisco platforms namely c3600 and c3700
  2. Influencing inbound and outbound routes using metric tweaking involving Weight, Local Preference, AS Path, MED
  3. Manipulating routes to a specific ISP and configuring fail-over routes to secondary ISP. Analysis of performance based on time.

Software Defined Routing and DVRP Implementation **[TCP/UDP Socket Programming, GNU, C, C++]**
- Implemented a simplified version of a router which performs Control Plane & Data Plane functionalities and performs routing updates in a Distance Vector Routing fashion. This model works on top of Computer Science Dept. servers (acting as routers) at the University at Buffalo and hence performed routing and two-way file sharing, for all possible network topologies.

Reliable Transport Protocol **[TCP/IP, GNU, C, C++]**
- Programmed a protocol at L4 of OSI for reliable delivery. The protocol picks the best features from Go-Back-N and Selective Repeat protocols, an efficient multiple-timer strategy and a comparison of the 3 protocols in terms of packet delivery, loss and corruption.

Simple DynamoDB - Amazon's Replicated Key Value Storage **[Android, Java, Socket Programming, DynamoDB, SQLite]**
- Implemented a simplified version of Amazon DynamoDB in Java, using 5 Android Virtual Devices acting as nodes. The design takes care of Partitioning, Data Replication, Node Failures and Replica Synchronization & Conflict Resolution using Object Versioning.

Distributed Hash Table – P2P Key Value Storage System **[Android, Java, Socket Programming, DHT Chord, SQLite]**
- Developed a simplified version of DHT based on the Chord algorithm using 5 Android Virtual Devices acting as nodes. The model is capable of handling ID space portioning/re-partitioning, Ring based routing and joining of new nodes to the networked system.

Distributed Message and File Sharing System **[TCP Socket Programming, GNU, C, C++]**
- Designed a shell-based Multi-Client Chat Application and File Sharing System. The application works on top of the Computer Science Dept. servers at the University at Buffalo. This application implements both Client-Server and P2P model and provides functionalities like: Client login logout and active tracking, message storage and delivery guarantee and blocking client access.

Post-Quantum Security Algorithms for Constrained Devices **[Python, C, C++, Raspberry Pi]**
- Programmed the following algorithms in Python and C: LP, U-LP, BLISS and NTRU. Performed a comparative study of Lattice-based cryptographic algorithms and evaluated their performance by testing them on constrained device environment (Raspberry Pi B+).

COURSEWORK

- **Undergraduate:** Computer Networks, Routing Protocols, Switched Networks, Operating Systems, Application development in Java
- **Graduate:** Algorithms Analysis, Machine Learning, Information Retrieval, Modern Networking Concepts, Computer & Network Security, Applied Cryptography, Distributed Networked Systems, Wireless Network Security, Information Assurance

ACHIEVEMENTS & HONORS

Young Innovator Award 2014, **Tech Mahindra Ltd.** - Suggested a cost-effective idea that could eliminate IP phones within the company campus.
Best Engineering Project 2012, Chitkara University – Designed a free wireless IP telephony system between two University departments.
Co-founded a firm named Chandigarh Gaming - Organized LAN Gaming events at various universities in India including IITs.