agautam2@buffalo.edu | **Abhishek Gautam** | linkedin.com/in/gautammm
http://www.buffalo.edu/~agautam2/ | **(716) 431-9774** | https://github.com/gautamgitspace

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
Networking: BGP, IS-IS, OSPF, EIGRP, MPLS, MBGP, STP, RSTP, VTP, VLANs, CDP, HSRP, VRRP, GLBP, TCP/IP, DNS, UDP, VoIP, QoS, LACP, PAgP, SNMP, FEX, FabricPath
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: Open vSwitch, VMware NSX, SDN, OpenFlow, Cisco Nexus 1K, 2K, 5K and 7K, Cisco 3725, 3640, Catalyst - 2960-X, 3750, 3850, 6513, 2950T-48, Compact – 3560,2960, ISR – 2800,2900, Data Center Networking.
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.
- Working towards re-setting up a testbed related to SDN/VPN based research project in collaboration with AT&T Labs by building and debugging the controller (in C and Python) and data path of OVS.

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, a web server in Django that help 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.

CE to CE MPLS L3 VPNs and LDP Packet Analysis **[MPLS, MBGP, OSPF, Cisco ISR 2800, 2900, GNS3, Cisco EPC]**
- Analysis of MPLS packets by configuring MPLS on Cisco ISR platforms and capturing packets using Cisco Embedded Packet Capture
  1. Simulated network environment consisting of Cisco ISR routers and configured MPLS L3 VPNs between two customer sites.
  2. PE to PE routing using MBGP, CE to PE routing using OSPF, Route redistribution between VRF on PE and CE.
  3. Control Plane and Data Plane verification by capturing packets (using Cisco EPC) and analysis of Transit labels and VPN labels.

Software Defined Routing and DVRP Implementation **[C, C++, Python, SDN, TCP/UDP Socket Programming, UNIX]**
- 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.
  1. The Controller (scripted in Python) reads a text based topology file and sends control codes and policies to the router on an open port.
  2. The Router (written in C++) handles these control codes, builds routing tables and performs Data Plane functionalities.

L3 High Availability Data Center Model **[Cisco NX2k, NX5k, NX7k, FabricPath, vPCs, FEX, LACP, FHRPs]**
- Designed a highly redundant Data Center design capable of load balancing using ECMP on Cisco Nexus Platforms:
  1. Configured Spine, Fabric and Classical Ethernet domains using NX2k as TOR and NX5k as EOR and NX7k as Spine Switches.
  2. Configured FabricPath between Spine and Edge, vPC domains (NX7Ks and NX5Ks), FEX between NX5K and NX2K and Downstream
  3. Control Plane and Data Plane verification and analysis by capturing packets.

Reliable Transport Protocol **[C, C++, TCP/IP, UNIX]**
- 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.

Distributed Message and File Sharing System **[C, C++, TCP Socket Programming, UNIX]**
- Designed a shell-based Multi-Client Chat Application and File Sharing System. This application implements both Client-Server and P2P model and provides functionalities like: Client login logout, active tracking, message storage, delivery guarantee, blocking client access.

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.