Krishna Pratap Singh
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Experience Summary

- Currently working on L4-L7 layer protocols and traffic profiles associated with it.
- Expertise in working with OpenFlow and other network based protocols.
- Well versed in networking concepts and troubleshooting.
- Proficient in python and have familiarity with C/C++, Java.
- Experience in creating virtual network with Open vSwitch and generating packet streams to pass through them.
- Proven ability to acquire proficiency in new technologies and products and implementation.
- Strong problem solving, analytical, communication and troubleshooting skills
- Passionate, inquisitive, self-motivated, flexible and has the ability to work well independently and cooperatively in a team environment

Experience

Spirent Communications, San Jose, CA **July 2016 – Present**
Software Engineer, Network Security

- Optimized load engine for the backend which is responsible for generating traffic for different profiles. The optimization improved load prediction during transaction loss.
- Added new features to application layer protocols implementation.
- Developing backend engine which implements the L4-7 protocols and manages traffic loads of different profiles.

Spirent Communications, Raleigh, North Carolina **June 2013 – July 2016**
Software Engineer

- Spearheaded the OpenFlow Switch Emulation (OSE) project, a key part of Software Defined Networking (SDN) since its inception. Led the effort with prototyping, researching, designing, coding and troubleshooting challenges related with virtual switches.
- OSE allows you to stress-test the OpenFlow based Controller by emulating various topologies and test hundreds of switches at high scale, number of networks, and number of Packet-ins etc.
- Optimized the next phase of OSE and created python utilities, which enabled new design to interact with wizard.
- The optimization improved the overall performance of topology creation and traffic generation by 40%.

Juniper Networks, Herndon, Virginia **February 2013 – May 2013**
Engineering Intern

- Supported customer service engineers on lab setup, problem replication and fix verification.
- Configured Network protocols on Juniper network routers, switches, firewalls, other vendor routers etc.

Morta Security, Hanover, Maryland (Acquired by Palo Alto Networks) **October 2012 – January 2013**
Engineering Intern

- Performed protocol analysis and packet inspection of enterprise network environments
- Responsible for writing advance network packet capture filters to aid in the analysis of protocol handshakes and data exchanges
- Codify the results of the analysis into python scripts for further network analysis and protocol testing. The work was focused on network protocols and analysis of packet captures at the hex and binary level.

Spirent Communications, Raleigh, North Carolina **June 2012 – August 2012**
Engineering Intern

- Worked with Spirent Test Centre to analyze metrics of various protocols with the help of Wireshark.
- Code migration of routing protocols from C to C++ so that it is G++ compatible.

Education

University of Maryland, College Park, MD May 2013
Master of Science, Telecommunications CGPA – 3 .5

Sardar Patel Institute of Technology, University of Mumbai, India May 2010
Bachelor of Engineering, Electronics & Telecommunications GPA – 3.5

Technical proficiency

Languages : Python, C / C ++, Java
Operating Systems : Windows, Unix, Mac
Protocol Knowledge : OpenFlow, TCP/IP, UDP, IPv4, RIP, OSPF, EIGRP, BGP, MPLS, RSVP, Cisco IOS,SIP
Tools : Eclipse, Wireshark, OPNET, Microsoft Visual Studio, Perforce, Git

Course Project

Dynamic right sizing a TCP flow control investigation in OPNET

- This project investigated a simple OPNET implementation of Dynamic Right sizing.
- Right sizing lets the receiver estimate the sender's congestion window size and uses that estimate to dynamically change the size of the receiver's window advertisements.

SSL implementation on 8051/8053 Microcontroller

- Implementing Secure Socket Layer protocol on constrained device such as 8053.
- The cryptographic algorithm used was ECC. This project required understanding of abstract algebra, use of C language and Socket Programming.

DNS Benchmarking of top sites

- A C++ program that periodically sends DNS queries to the name-servers of top ten Alexia domains and stores the latency values in myql table.
- The frequencies of queries were specified by user and the program needed to make sure it doesn't hit the DNS cache while querying. Besides the time series values, the code tracked in DB stats per domain about average query times, standard deviation of DNS query, number of queries made so far and time stamps.

Simulating an Instant messaging system

- Authentication of multiple users and the exchange of message using Super node.
- Application of Unix Socket programming.

Video Browsing and Indexing

- The project's first task was to quickly browse a video to extract useful information that video offers.
- Second task was to efficiently index and search for contextually similar videos in other videos.

Activities & Awards

- Awarded Certificate of Excellence for work in OSE project.
- Published National level paper on topic "Elliptic Curve Cryptography Speeding up Web Operations".