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OBJECTIVE

Seeking a challenging software development position so that I can apply my problem solving skills and expand my areas of expertise to new domains.

WORK EXPERIENCE

Cisco Systems Inc., San Jose, CA
Software Engineer, SAVBU

July'10 - Current

- Involved in the **development of the new Cisco n6000 series of switches**. Worked on the forwarding layer right from the DOL stage to the release stage. This entailed validating the new ASIC model (based on RTL code), modifying the existing OS to work with the updated hardware and registers, implementing new forwarding related features and porting existing features to the new hardware. A lot of work was also done troubleshooting the data flows on the switch. This switch would be the first Cisco NXOS switch to be used in the spine layer, between the access and aggregation layer.
- Develop and maintain **the I2 layer of the forwarding plane** on Cisco's n5000 series of switches.
- Designed and maintained **network management modules** on Cisco's N5000 switches. These modules include (but are not limited to) SNMP, SSH, TACACS, RADIUS, AAA etc.

Mailshell Inc., Santa Clara, CA
Software Engineer

June'07 - July'10

- Designed, wrote and maintained tools used for **anti-spam analysis**. These ranged from simple Bayesian classifiers to multi-core proprietary engines & enhanced the existing proprietary Anti-spam SDK and developed other tools required by the clients (such as proxies and plugins to use the SDK).
- Spearheaded the adoption of companywide **python usage for regression tests and continuous integration**. This led to a reduction of test development time by a factor of ten and almost doubled the number of regression tests by a factor of three.

Syracuse University, NY

Research Assistant under Dr Wenliang Du, Dept Of Computer Science

August'06 - May'07

- Developed instructional laboratory projects for **computer security** education. These projects are used by the faculties and students (undergraduate and graduate) at various universities as laboratory exercises for computer system security education. These included demonstrating various attacks like buffer overflow, LD_PRELOAD, return-to-libc, format string vulnerability etc.
- Developed various security related products on Minix 3.1.2a such as Encrypted File System, IPSec (ESP tunneling with authentication based on RFC 2401 and 2406) and ASLR.
- Project funded by National Science Foundation (\$451,682, 01/2007-12/2010. Grant No. 0618680).

Research Assistant under Dr Marc Howard, Dept of Psychology

September'05 - August'06

- Did an Independent study on "**Multidimensional Function Minimization using Genetic Algorithms**". The objective was to research the use of genetic algorithm as a viable alternative to Nelder-Mead for fitting cognitive models.
- Simulated cognitive models (based on Temporal Context Model developed by Dr Marc Howard and Dr Michael Kahana). These simulations are used to prove the correctness of the neural networked model of the short term memory under various hypothetical situations. Standard C++ was used for implementation.

TECHNICAL SKILLS

Programming Languages & tools:

- Development experience on various versions of Linux, Solaris, FreeBSD, Minix, MacOSX and Windows.
- Good C & C++ programming skills on Linux.
- Intermediate Python, Bash shell scripting skills.
- Experience with development tools like buildbot, gdb, gprof, valgrind, make, svn etc.
- Unix IPC, multithreaded programming using pthreads.
- Academic experience with network monitoring and security tools like wireshark, netwag/netwox etc.

Domain Specific knowledge:

- Networking technologies: Layer 2 forwarding constructs & switch management.
- Spam related technologies; including (but not restricted to) SMTP, mail servers, proxies, pattern analysis and other spam detection methodologies.

EDUCATION

Syracuse University, L.C Smith College of Engineering & Computer Science, Syracuse, NY May 2007
M.S. in Computer and Information Science.
GPA: 3.77

S.J.C Institute of Technology, Chickballapur, Karnataka, India May 2005
B.E. in Computer Science and Engineering

RELATED PROJECTS

- **Compiler for PL** Apr 2007
Implemented a compiler for PL (an educational programming language) in Java under Dr Per Brinch Hansen. The compiler generated machine code for a virtual computer.
- **IPSec on Minix 3** Dec 2006
Implemented IPSec, ESP tunneling with authentication, on Minix 3.1.2a. This system involved adding encryption/decryption functionality at the IP layer. The implementation was done according to RFC 2401 & 2406 and involved key management module (manual key exchange) for using different keys for different communication channels.

OTHER PROJECTS

- **System Security:** TCP Vulnerability testing, ARP/IP/ICMP Vulnerability testing, Format String Vulnerability testing, Buffer Flow exploits, Race Condition Exploits, Set Random-UID, Return to libc attack, IPSec (on Minix3) and Encrypted File System etc.(extensive use of C and GDB)
- **OS Design:** Hashed Dynamic Loader (Linux), FIFO page replacer (FreeBSD4.1), ASLR and Capability (Minix3.1.2a). Fair Share Process Scheduler (FreeBSD).
- **Scientific Computing:** FRAMOF: Framework for Model Fitting (GA), Simulated various cognitive models at Memlab (Dept of Psychology, Syracuse University). (C/C++/Ruby/Perl/Bash)
- **Application Software:** Profiler Framework (C++), File Annotator (C++), Remote Test Bed(C#), Remote Directory Synchronizer(VC++ 8.0) , Compiler for PL(Java), Patch for RealPlayer on Linux(Based on Helix)

ACCOMPLISHMENTS

- Stood third in the TopCoder's Collegiate Challenge held at Syracuse University.
- Won **1st Prize** in **iTalent-2004**, a paper presentation contest, organized by **CII: Confederation Of Indian Industries , Chennai**.
- Academically first in my undergraduate college & was awarded a **Gold Medal** for excellence in academics.