Harshal Patil

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EDUCATION

New York University, Courant Institute of Mathematical sciences, New York, NY — **May 2010**
Master of Science, Computer Science — GPA : **3.72 / 4**
Pune University, Rajarshi Shahu College of Engineering, Pune, Maharashtra, India — **May 2007**
Bachelor of Engineering, Computer Science — First Class with Distinction, **67%**

RELEVANT COURSEWORK

Heuristic Problem Solving, Foundations of Machine Learning, Database Systems, Operating Systems, Programming Languages, Mathematical Techniques for CS Applications, Fundamental Algorithms, Honors Analysis of Algorithms, Computational Complexity of Algorithms, Approximation Algorithms

RESEARCH EXPERIENCE

- **Pandemic Game** with Prof. Dennis Shasha : Developing a game in javascript to teach children how to use concepts of bootstrapping and confidence intervals; the game's objective is to determine the causes of a pandemic in the shortest time possible given the symptoms and a subset of contagions
- **Virtual Cloud** with Prof. Norman White : Researched, configured and created a cloud computing environment of virtual machines; implemented live migration and grid computing capabilities
- Paper on **Service Oriented Architecture for Road Traffic Management**, National Conference on Soft Computing and its Applications, ANITS, Dec. 2007 : Created a model that uses real-time cell phone data to dynamically determine traffic light patterns

PROFESSIONAL EXPERIENCE

Stern Research Computing, NYU, New York. (*Linux Administrator*) — **Aug 2008 - Present**

- Designed and implemented automated configuration programs using Shell to create and add custom virtual machines on the fly to a virtual cloud; scripts also configure the DHCP server
- Developed and administered a Preboot eXecution Environment(PXE) to install automatically on boot an operating system onto a machine across a network; configure services such as LDAP, NIS and NTP
- Implemented an IP randomizer; administered finance faculty research projects; troubleshooting failures in hardware, networks and software such as Matlab and MySQL

Persistent Systems, Pune, India. (*Software Engineer*) — **June 2007 - July 2008**

VMware Device Driver Kit (OS - **VMware ESX**, Languages - **Perl**)

- Modified Network and Storage performance tests in VCT framework for testing performance on hosts as well as inside virtual machines which use either VMFS vmdk or RDM or Raw Disk as data store
- Enhanced DDK by finding and solving various bugs introduced due to ESX Operating System upgrade

Virtual iSCSI Tape (Platform - **Linux Kernel 2.6.25**, Languages - **C/C++**)

- Modified kernel module and user mode component of iSCSI target utility (iSCSI client) to provide tape impersonation of SCSI disks over iSCSI network by hacking into SCSI stream commands and responses

Calsoft Systems Limited, Pune, India. (*Undergraduate Intern*) — **June 2006 - May 2007**

Zipped RAM Pages (Platform - **Linux Kernel 2.6.19**, Languages - **C/C++**)

- Inserted a new level into the memory hierarchy where a portion of main memory is allocated for the Zipped cache and is used to store more pages zipped by data compression algorithm to reduce page faults

SKILLS

- **Programming Languages :** C, C++, Shell, Perl, HTML, LaTeX. Intermediate skills in Java-script, Java, Visual Basic, Python, Matlab, Scheme, ML
- **Operating Systems :** Linux (RedHat, VMware ESX, Fedora, Ubuntu), Basics of Microsoft Windows
- **Software Tools and Technologies :** VIM, GDB, KDB, Bugzilla, SVN, Perforce, iSCSI, KVM, XEN

COURSEWORK PROJECTS

Micro-mouse (Platform - **Keil compiler**, Languages - **C++**)

- Created a robot to find shortest path in a maze using 8051 micro-controller chip and stepper motors

Sat Solver (Platform - **Linux/Windows**, Languages - **C++, Scheme, ML**)

- Implemented a Satisfiability Equation solver using DP and DPLL Algorithms in different languages

File type Detector (Platform - **Linux/Windows**, Languages - **C++**)

- Developed a program to detect harmful file types using supervised machine learning of Magic numbers

ACHIEVEMENTS & HONORS

- Won **C Programming Competitions** held across State of Maharashtra.
- Secured 16th position in **Mathematical Olympiad** held across States of Maharashtra and Goa
- Captained **Soccer** and **Chess** teams of School, College and Persistent Systems