

# Jitesh H Shah

707 Continental Cir, Apt 1026, Mountain View CA 94040

**Email:** mail@jiteshs.com, jhshah@ncsu.edu **Phone:** 919-757-7686

**Github:** <https://github.com/jitesh1337>

## OBJECTIVE

Position as a system software engineer.

## EDUCATION

- **North Carolina State University**, Raleigh, US Aug 2010 - July 2012  
*MS in Computer Science. GPA: 4.00/4.00*
- **Pune Institute of Computer Technology**, Pune, India Aug 2004 - Jun 2008  
*Bachelor of Engineering, Computer Engineering. CGPA: 3.97/4.00*

## RELEVANT COURSES

Operating Systems (A+), Design and Analysis of Algorithms (A+), Fundamentals of Parallel Computer Architecture (A), Cloud Computing (A), Internet Protocols (A+), Embedded Systems (A+), Network Security (A)

## RELEVANT EXPERTISE

ARM architecture, Trustzone, ARM hypervisor extensions, Bootloader experience (Qualcomm and System LSI chipsets), experience in kernel early boot and memory management. Worked extensively on the Qualcomm Trustzone OS.

## COMPUTER SKILLS

**Skillset:** Linux kernel programming, System programming, Embedded development, TrustZone development  
**Launguages:** C, GCC inline assembly (used for ARMv7), Python, Shell scripting, C++/Java (entry level)  
**Tools:** Git, Make, gdb, strace, valgrind, gprof/gcov, oprofile, cscope/ctags, Lauterbach JTAG  
**OS:** Linux (RedHat and Debian based distributions), Windows

## WORK EXPERIENCE

- **Samsung Telecommunications America**, San Jose, US Aug 2012 - Present  
*Senior Software Engineer, B2B R&D lab*
  - Designed and developed a TrustZone based real-time kernel protection tool for Samsung's enterprise offering - KNOX. This tool traps all page-table writes inside TrustZone to make sure that no code is added, removed or edited in the kernel space.
  - Developed on Qualcomm's Krait processor (armv7-like), dealt with low-level kernel MMU functions, used Lauterbach JTAG, good knowledge of Qualcomm's TZ software.
  - Currently exploring the feasibility of doing the above with hypervisor extensions for armv7. Working with the system LSI Exynos5420 chipset.
- **North Carolina State University**, Raleigh, US Jan 2011 - Present  
*Graduate Research Assistant, Cyber Defense Laboratory*
  - Developed an execution environment for the TrustZone secure world on an i.MX53 development board from FreeScale (Cortex-A8 processor). It features an abstraction of a task, a basic run-to-completion scheduler and a linkable library to write apps inside the environment.
  - Ported an Offline VM patching tool to RPM-based distributions
- **NVIDIA**, Beaverton, US May 2011 - Aug 2011  
*Hardware Intern, Mobile BU*
  - glibc functions optimization for an ARMv7-based Tegra processor
- **Marvell Semiconductors Pvt. Ltd.**, Pune, India Jul 2008 - Jul 2010  
*Software Engineer, Wireless R&D*
  - Maintainer of the Fedora-ARM project Jan 2009 - Dec 2009

Bootstrapped Fedora for the ARM architecture. Built around 90% of the RPM repository. Released three versions: Fedora 10, 11 and 12

- Designed and implemented a flash-based configuration manager, a low-footprint HTTP server and an SSDP (Simple Service Discovery Protocol) module for an ARMv5-based wireless microcontroller (ThreadX Operating System)
- Wrote drivers for the on-board crypto engine of an ARMv5 microcontroller

## PROJECTS

- **Provenance Management for VCL-based cloud** Jan 2011 - Apr 2011  
Implemented secure and stealthy monitors on VM instances (CentOS) in the NCSU's VCL (Virtual Computing Lab) environment for resource usage and anomalous events (by scouring security logs). Programmed in Python and shell scripts
- **User-level thread library similar to pthread** Jan 2011 - April 2011  
Implemented a user-level thread library, with scheduler & mutex support, and API same as the pthread library. Implemented in C on Linux (code available on github)
- **Network-assisted TCP congestion control module** Sep 2010 - Nov 2010  
Designed a new TCP congestion control module with assistance from the network. Implemented it on the Linux kernel. Compared with TCP CUBIC and RENO
- **Re-design of UBI metadata for faster mount times** Jun 2009 - Mar 2010  
Mentored a senior year project aimed at improving mount times of huge flash devices that use UBI at the block layer. Got a speed-up of about 2x with the new design. Implemented inside the Linux kernel
- **Optimizing Network data paths in a virtual network** Jun 2007 - Mar 2008  
Optimized TCP communication among guest VMs running on the same physical machine by sharing memory pages between the guest VMs. Achieved a speed-up of about 3x. Implemented over the coLinux hypervisor

## HONORS

- University topper in the University of Pune, 2005-06
- Highest score in Engineering Mathematics, University of Pune, 2004-05