

Mehul Prajapati

Embedded Linux Developer

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Education

- **Dharmsinh Desai University** GPA: 3.3/4
• *B.E. Electronics and Communication* 2008 - 2012

Work Experience (4 years)

- **Mobile Internet India Pvt Ltd.** *Senior Embedded Engineer, April 2016 - present*
 - Working in a Protocol Stack Development team. (C, TCP/IP Networking, Firmware)
- **Upwork** *Freelancer, September 2016 - present*
 - Working on web development projects. (Python, Django, OpenCV)
- **Volansys Technologies Pvt Ltd.** *Embedded Software Engineer, October 2014 - July 2015*
 - Worked in Board bring up of ARMv7 compliant Thin client. (C, Board Support Package)
- **eInfochips Pvt Ltd.** *Embedded Software Engineer, January 2014 - October 2014*
 - Worked on Linux kernel porting and customization. (C, Firmware)
- **Matrix Comsec Pvt Ltd.** *Software Developer, August 2012 - January 2014*
 - Upgrading Telecom products with new features as per requirements. (C, Makefile, IPC)

Technical Skills

- **Programming Languages:** C, HTML, CSS, JavaScript, XML, LaTeX
- **Scripting Languages:** Linux Bash Shell, Python
- **Database:** SQLite, MySQL
- **Machine Learning Libraries:** NumPy, Scikit-learn, Pandas, Matplotlib
- **Frameworks/Libraries:** Django, OpenCV
- **OS:** Linux (Ubuntu), Windows
- **Linux Programming:** Multithreading, IPC, TCP/IP Socket Programming, Cross building, Makefile
- **Version Control Systems:** git, svn
- **Bus Protocols:** SPI, I2C, CAN, UART
- **Network Protocols:** HTTP, TCP, UDP, FTP, RADIUS, Syslog, SNMP
- **Development boards:** Raspberry Pi, Beaglebone Black, TM4C123, Intel Galileo, NodeMCU ESP8266
- **Software Tools:** Eclipse CDT, Keil μ Vision 4, vim, gdb, Code Composer Studio, Atmel studio, Anaconda, Jupyter-Notebook
- **Software Engineering Methods::** SCRUM

Other Skills

- **Swimming, Chess:** Active member of sports club
- **Puzzle Solving, Competitive Programming:** Practicing as an independent

Achievements & Awards

- Got National Merit Scholarship from government of India for achieving excellent grades during under-graduation.
- Student Appreciation Award, Torrent Power Ltd.

Volunteer

- **Stanford Scholar Program** *Participant, Feb 2017 - present*
 - Making research paper accessible to non-researchers.
- **Python Express** *Mentor, Sept 2016*
 - Taught basics of Python language to undergraduate students.
- **Mozilla** *Firefox Student Ambassador, July 2016 - present*
 - Actively participating in Mozilla community meetups and events.

Courses

- **edx:** Embedded Systems, Applied Machine Learning, Programming with Python for Data Science, Introduction to Computer Science
- **Coursera:** Machine Learning, Introduction to Web Development, Learn to Program: The Fundamentals
- **Goethe Zentrum:** German language (Level - A2)

Professional Projects

- **Embedded SMS Server**

A customer had requested a feature in the Matrix IP-PBX products to convert the SMS to Email and Email to SMS. The project involved adding the required features by following SMTP and POP3 protocols. (C, IPC, Makefile)

 - Developed SMS PDU Encoder and Decoder module by following GSM 3.40 standard.
 - Developed SMS sender, SMS receiver, SMS delivery and System Timer modules to handle all SMS related activity on the system by leveraging finite state machine algorithm and linked list data structure.
 - Customized Syslog and Busybox open source utilities.
 - Developed a wrapper module to encode and decode Unicode characters into UTF-8 format using libiconv open source library.
 - Developed bash shell scripts and Makefiles to cross compile software modules.
- **Real time IP data traffic accounting**

Accounting IP data consumption of users and showing its real time graph on web application. (C, MySQL, TCP/IP Networking, PMacct)

 - Customized promiscuous mode accounting(PMacct) utility for IP data accounting in MySQL database.
 - Developed RADIUS protocol dissection module and integrated it into PMacct.
 - Developed an algorithm which maps IMSI with IP address to maintain call states in PMacct by leveraging Hash table.
- **IP traffic monitoring using SDN switch**

Customizing Zodiac-FX SDN switch firmware to support packet filtering, de-duplication, tagging and aggregation. (SDN, Firmware, C)

 - Developed de-duplication module to remove duplication in real-time by comparing md5hash of Ethernet packets.
 - Configured HPE VAN SDN controller to do packet filtering and tagging.

- **Thin client on ARMv7 based development board**

A customer wanted to build a dual display package on ARMv7 based board for thin client application. It also involved porting of customized ubuntu file system. In that file system we have supported different applications like firefox, totem media player, document viewer and and gstreamer media framework. (C, BSP)

- Ported Ubuntu 12.04 file-system and Board Support Package on Marvell PXA2128 SoC based development board.
- Porting of firefox by using scratchbox2 toolkit.
- Implemented hot plug HDMI event by using udev rules.

- **Analyze marine sensors data over the internet (IoT)**

Fetching marine sensors data from CAN bus and sending it over the internet. (C, Linux kernel, SQLite, CAN boat)

- Board Bring up of TI AM335x Cortex-A8 industrial application based development board.
- Ported custom Linux Kernel 3.2 on TI AM335x Cortex-A8 based development board.
- Developed SQLite wrapper utility which manages data in SQLite database.
- Customized CAN Boat utility which fetches NMEA2000 compliant marine sensor data from CAN bus, decodes it and sends over TCP/IP network for analysis.

- **GSM Engine Support**

This project involved evaluation of various GSM engines and adding support of respective GSM modules to Matrix IP-PBX and GSM Gateway products. (C, Windows)

- Evaluation of GSM engines of different vendors like Quectel, SIMCOM and Sierra Wireless.
- Modification of existing GSM library code to support tested GSM engines.

- **Computer Telephony Integration**

This project involves the development of TSP (Telephony service provider) driver for Matrix IP-PBX products. (C, Socket programming)

- Developed TCP socket client application which encodes and decodes proprietary protocol data.
- Developed Windows Registry module which would add/modify the configuration of any software installed in the windows system.