Mehul Prajapati
Embedded Software Developer
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Education

- **Dharmsinh Desai University** — Nadiad, India
  B.Eng in Electronics and Communication, GPA: 3.3/4 — *July 2008 - May 2012*

Professional Experience (4.3 years)

- **Mobile Internet India Pvt Ltd** — Ahmedabad, India
  Senior Embedded Engineer — Apr 2016 - present
  - Development of Radius protocol sub-dissectors in wireshark 2.4.0 source code.
  - Development of Python scripts to automake tasks.
- **Volansys Technologies Pvt Ltd** — Ahmedabad, India
  Embedded Software Engineer — Oct 2014 - July 2015
  - Board Support package porting on ARMv7 based Marvel board.
- **eInfochips Pvt Ltd** — Ahmedabad, India
  Embedded Software Engineer — Jan 2014 - Oct 2014
  - Evaluation of TI6630K2L board peripherals.
- **Matrix Comsec Pvt Ltd** — Vadodara, India
  Software Developer — Aug 2012 - Jan 2014
  - Development of new features as per requirements for IP-PBX telecom products.

Technical Skills

- **Programming Languages:** C, Python, Linux Bash Shell, LaTeX, HTML, CSS, XML
- **Databases:** SQLite, MySQL
- **Frameworks/Libraries:** Flask, NumPy, Scikit-learn, Pandas, Matplotlib
- **Linux Programming:** Multithreading, IPC, TCP/IP Socket Programming, Makefile
- **OS:** Linux (Ubuntu), Windows
- **Version Control Systems:** git, svn
- **Bus Protocols:** SPI, I2C, CAN, UART
- **Network Protocols:** HTTP, TCP, UDP, Radius, Syslog, SNMP, SMPP
- **Development boards:** Raspberry Pi, Beaglebone Black, TM4C123, Intel Galileo, NodeMCU ESP8266
- **Software Tools:** Eclipse CDT, Keil μVision 4, Code Composer Studio, Visual Studio, PyCharm, Jupyter-Notebook, vim
- **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

- **Proprietary Wireshark** (C, TCP/IP Networking)

  Enhancements of Radius protocol dissector.

  - Developed sub-dissectors in wireshark to decode specific parts of the customized Radius protocol.
  - Implemented new display filters of proprietary dissected fields.
  - Maintained Radius protocol states dynamically and showed state information on packet details pane of wireshark GUI.

- **Data logger for Maritime (IoT)**

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

  - 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 canboat utility which fetches NMEA2000 compliant marine sensor data from CAN bus, decodes it and transmits to the cloud for analysis.

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

  A customer wanted to build a dual display package on ARMv7 based board for thin client application. (C, BSP)

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

- **Embedded SMS Server**

  Development of a server to convert the SMS to Email and Email to SMS in the Matrix IP-PBX products. The project involved developing 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.
  - Customized Syslog and Busybox open source utilities.
  - Developed a wrapper module to encode and decode Unicode characters into UTF-8 format using libiconv.
  - Developed bash shell scripts and makefiles to cross compile software modules.

- **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.

- **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 to store accounting data in MySQL database.
  - Developed Radius protocol decoder module using raddump library and integrated it into PMacct.
  - Developed an algorithm which maps IMSI with IP address to maintain call states in PMacct.

- **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.