Mehul Prajapati
Embedded Software Developer
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Education

- **Concordia University** — Montreal, Canada
  Masters in Applied Computer Science — *Sept 2018 - May 2020 (Expected)*

- **Dharmsinh Desai University** — Nadiad, India
  B.E. in Electronics and Communication — *July 2008 - May 2012*

Professional Experience (5 years)

- **Google Summer of Code** — Intern, May 2018 - Aug 2018
  - Development of Redis based queue interface plugin. — Remote

- **Mobile Internet India Pvt Ltd** — Senior Embedded Software Engineer, Apr 2016 - Aug 2018
  - Development of Radius protocol sub-dissectors in wireshark 2.4.0 source code. — Ahmedabad, India

- **Volansys Technologies Pvt Ltd** — Embedded Software Engineer, Oct 2014 - July 2015
  - Board Support package porting on ARMv7 based Marvel board. — Ahmedabad, India

- **eInfochips Pvt Ltd** — Embedded Software Engineer, Jan 2014 - Oct 2014
  - Evaluation of TI6630K2L board peripherals. — Ahmedabad, India

- **Matrix Comsec Pvt Ltd** — Software Developer, Aug 2012 - Jan 2014
  - Development of new features as per requirements for IP-PBX telecom products. — Vadodara, India

Technical Skills

- **Programming Languages:** C, Python, Linux Bash Shell, LaTeX

- **Databases:** SQLite, MySQL

- **Machine Learning libraries:** NumPy, Scikit-learn, Pandas, Matplotlib, Keras, Tensorflow

- **Linux Programming:** Multithreading, IPC, TCP/IP Socket Programming, Makefile

- **Platforms:** Linux (Ubuntu), Windows

- **Version Control Systems:** git, svn

- **Bus Protocols:** SPI, I2C, CAN

- **Network Protocols:** HTTP, TCP, UDP, Radius, Syslog, SNMP, MQTT

- **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, JIRA

- **Software Engineering Methods::** Scrum

Professional Projects

- **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 complying to GSM 3.40 standard.
  - Developed SMS sender, SMS receiver, SMS delivery and System Timer modules to handle all SMS related activity on the system.
  - Developed a module using syslog APIs for logging debug messages.
  - 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 with ARM tool-chain.

- **Proprietary Wireshark**

  Enhancements of Radius protocol dissector. (C, TCP/IP Networking)

  - Developed sub-dissectors in wireshark to decode proprietary attributes of the Radius protocol.
  - Implemented wireshark display filters of proprietary attributes.
  - Managed the Radius protocol states dynamically and displayed the 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.

- **Real time IP data traffic accounting**

  Accounting IP data consumption of users and plot 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.

- **Dynamic firewall server**

  This project involved integration of iptables code into freeradius on firewall server. (C, Linux)

  - Ported iptables code into freeradius.
  - Implemented an algorithm to insert, delete and update firewall rules with RADIUS packets.