Parth Jadvani

Embedded Software Developer with **Over 5 years** of experience in VLSI & Embedded system design.
Involved in Algorithm Design, DSP Optimization, System Integration and Software Architecture design.

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CAREER SUMMARY

- Core development areas are Automotive, Infotainment, Mobile Camera platform & System Automation.
- Involved in Performance and Architecture modeling to prototype virtual Qualcomm camera platforms.
- Firmware integration of Multicore Heterogeneous hardware platforms like TDA2x, TDA3x, AM5728, etc.
- Achieved performance gain by DSPs and ARM optimization on complex signal processing algorithms.
- Worked on bootloader, board bring up, Cache utilization and DMA programming and BSP development.
- Algorithm design for speech recognition (Audio Processing) and gesture recognition (Image Processing).
- Working experience in Linux OS, RTOS (FreeRTOS), Multi-Threading, Kernel and Device Driver programming.
- Experienced with communication protocols like SPI, I2C, UART, TCP/IP, WIFI, Bluetooth and Zigbee.
- Willing to work on machine learning, deep learning, data science, augmented reality and virtual reality.

TECHNICAL SKILLS

Language & Library:	C, C++ (STL), Python, OpenVX 1.2, MATLAB, Verilog, SystemC, ARM neon and TI' DSP Intrinsic, OpenCV, OpenCL, CUDA, ARM Assembly, LABVIEW.
Processor & SOC:	RISC (ARM M Series), TI SOCs (TDA3x, AM5728, C66x DSP & EVE), Qualcomm SOCs (Snapdragon), Broadcom's Pixel Processor, Arduino, Raspberry Pi, 8086, 8051.
Development Tools:	Visual Studio, TI's CCS, Keil, Eclipse IDE, MATLAB, Microsemi, GDB & Valgrind debuggers.
Frameworks:	TI's Vision SDK & Radar SDK, Continental's MTS.
ADAS Guideline:	MISRA-C 2012 with Klockworks.
Content Management:	Git, Gerrit, Jenkins, Perforce.

EMPLOYMENT HISTORY

Alten Calsoft Labs (Onsite Qualcomm, Bangalore)	July 2018 - Present	Bangalore, India
PathPartner Technology (Onsite Continental, Bangalore)	Jan 2017 – Jun 2018	Bangalore, India
Physical Research Laboratory (M.Tech. Internship)	Aug 2015 – July 2016	Ahmedabad, India
Strawberry Enterprises (B.E. Internship)	Aug 2013 – May 2014	Ahmedabad, India

EDUCATIONAL QUALIFICATION

M.E. in VLSI & Embedded System Design (8.29 CGPA)	**B.E. in Electronics & Communication** (8.49 CGPA)
CDAC-Pune & Gujarat Technological University	Gujarat Technological University
(2014 – 2016)	(2010 – 2014)

PROJECT DETAILS

Project 1: Pre-Silicon and Post-Silicon simulation software design (Jan 2019 till today)
Role:

- Image Processing Algorithm development
- Support to pre- & post-silicon team
- Algorithm pipeline design
- Camera calibration & Test automation

Tools: Visual studio, PyCharm, GDB, Valgrind.
Challenges ::

- C++ & Python-based Image Processing model to create virtual platform for functionality validation.
- Mimic camera hardware behaviour with software pipeline development.

Project 2: Performance Modelling (Qualcomm Mobile Camera Platforms) (Jul 2018 to Dec 2018)
Role:

- Static model creation
- Dynamic model creation

Tools: MS Word, PyCharm
Challenges ::

- Dynamic analysis with variable processing load on different cores with TLM data.
- Static analysis of different camera use cases like Snapshot, Video, Still (only display), etc.

Project 3: Facial Expression Detection ML Algorithm on TI's TDA3x board (Feb 2018 to JUN 2018)
Role:
- Algorithm optimization for DSP & EVE core
- DMA utilization
- Framework integration
- MISRA-C 2012 compliance

Tools: TI CCS studio, Klockworks.
Challenges ::
- C66x DSP and EVE optimization using intrinsic (SIMD) and memory optimization.
- Framework integration between ARM (host core) and DSP/EVE (Vector Processor)
- Follow MISRA-C coding guideline to fulfil ADAS safety standards.

Project 4: Pedestrian detection ML algorithm on fully customized board (Onsite Continental) (Oct 2017 to Jan 2018)
Role:
- Algorithm optimization for Pixel processor
- Build repository development
- Framework integration
- Test automation

Tools: ARM toolchain, gdb, valgrind.
Challenges ::
- Optimisation of machine learning algorithms (like Image Scalar, HOG, LBP, SVM, Adaboost).
- Porting algorithm on ARM M7 & Pixel Processor.

Project 5: ISP Integration on TI's AM5718 board (May 2017to Sep 2017)
Role:
- ISP algorithm design
- Framework integration

Tools: OpenCV, ARM Toolchain, TI CCS studio.
Challenges ::
- Framework integration between ARM (Host core) and DSP (Vector processor)
- C66x DSP optimization.

Project 6: Algorithm Development for Surround view (Bird eye view) (Jan 2017 to Apr 2017)
Role:
- Algorithm development
- OpenCV library customization

Tools: OpenCV, Visual Studio.
Challenges ::
- Algorithm design for image transformation and Image stitching.
- Customization of OpenCV libraries like colour space conversion, Remap, Auto Point Detection, Histogram conversion, Omni Calibration, etc.

Project 7: Processing Electronics and Data Acquisition System for Gamma Ray Spectrometer (Jun2015 to May 2016)
Role:
- FPGA programming
- LABVIEW design

Tools: ADC, Microsemi FPGA design tool, LABVIEW
Challenges ::
- R&D project of ISRO & PRL MARS exploration mission.
- Precise FPGA design to achieve higher performance.
- Realtime Data Acquisition design with LABVIEW.

Project 8: System Automation using Speech and Gesture Recognition (Dec 2013 to May 2014)
Role:
- Algorithm development
- Arduino programming

Tools: Arduino, Matlab.
Challenges ::
- Interface development between machines and differently able people.
- Understanding speech behaviour (like tone, amplification, etc).
- Object detection with Image processing.