**Vinayaka C Pawate**

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**Qualification:**

**Masters in Advanced Computer Science, University of Leicester, UK**

2009-2010, **Distinction.**

**Bachelor of Engineering (Computer Science)**

Visveswaraiah Technological University, Belgaum, India

2003-2007, **First Class.**

**Experience:** ~10 years

* Around ~10 years of experience in C and C++ in Linux and Windows OS. Applications developed from Kernel to Application layer.
* Experience in designing, developing and implementing real-time, signal processing algorithms on a DSP platform. Worked on single-processor core devices like C64x DSPs. Implemented a video codec, H.264, leveraging VLIW-architecture.
* Experience of working in OPENGL ES graphics library on Beagleboard.
* Around 4 years of experience working with ARM and Texas Instruments DSP processor.
* Experience of working with STM Discovery Board and Xilinx Spartan family.
* Worked on many projects involving Magento, Symfony and Laravel framework.
* Experience in using debugging tools like JTAG debugger, Oscilloscope, GDB debugger and WinDBG.
* Around 5 year of experience in C# and WPF; 2 years in Java language.
* Around ~5 years of experience in developing device drivers in Windows OS and Linux OS.
* Experience of working on Capacitive touch screen Technology, 3D Touch Technology, OpenCV Library, Anti-Virus products and developing Custom SDK’s and fixing bugs in legacy software
* Complete software development life-cycle starting from requirement gathering through to operation maintenance support. Practice Agile Software Methodologies. Developed NSIS scripts and Used Verisign Code Signing Certificate to sign the application. Undergone ISO training and been Internal Auditor.
* Experience of using Source Version control like SVN, Mercurial, GIT and Rational Clear Case and Redmine (Project Management).
* Experience of developing bespoke Labview applications for Bio-Medical Industry (Vision Development Module).

**Technical Skills**

**Languages:** C, C++, C#, WPF, JAVA, SQL, HTML, PHP, XML, OPENGL, Python.

**FrameWork**: WxWidgets, QT, Magento, CSS, Twitter Bootstrap, Symfony, Laravel

**Assembly Language**: C64x Assembly Language, VLIW.

**Platforms worked:** DSP, TMS320 C6416 TEB, OMAP2430, OMAP3430, OMAP4430, Beagleboard, Beaglebone, Cypress PIC controllers, Micro controllers, Magento, STM Discovery Board, Xilinx – SPARTAN 3, Panda Board, LabView.

**Debugging Tools:** Lauterbach , JTAG Debugger ,CCS 3,CC4, WinDbg, Oscilloscope,

Microsoft Visual Studio Debugger, USB Analyzer, LabView Debugger

**RDBMS Packages:** Oracle 8.0, SQLITE.

**OS platforms**: UNIX, DOS, Windows Desktop and Windows Server, Linux, MAC, Android.

**Tools:** Swipe, Code Composer Studio, Rational Clear Case, Source Insight,Beyond Compare, TextPad, Notepad Plus Plus, Trace32, TTS, Mercurial Source Control, Understand C, Virtio, USB Analyzer, Eclipse, QT Creator, Netbeans, CodeBlocks, RedMine, NSIS,Dependency Walker, GNU compilers, Cross Chain Tools, Win Driver SDK,Cognidox, VS Expression Studio, VS Blend, Android Studio,Octave,Jenkins,Atom.

**Current Position**: Working as a Senior Software Engineer - 2 at Sophos, Abingdon, UK.

Company**: Sophos, Abingdon, UK. Oct - 2018**

Position**: Senior Software Engineer - 2, Current Position**

* Worked in a complete Agile process environment. Been through SDLC.
* Predominantly worked on products which would require C++. Using Designs patterns and smart pointers as part of C++11 standard. Involved while designing Windows Security design issues.Designed and developed database schema.
* Worked in multithreaded environment and Implementing Integration process is a key aspect.Product developed has to run in the ecosystem of other products.
* Developed prototype Windows Device driver for intercepting File I/O or registry changes.
* Worked on Windows Logging Framework (ETW - Event Tracing for Windows) integrating to the existing product.
* Used Google Mock, Google Unit test case framework and python (to develop Integration tests) as part of testing process.

Company**: Cambridge Touch Technologies, Cambridge, UK. Feb - 2017 - Sept - 2017**

Position**: Senior Software Engineer.**

* Developed touch screen device driver - USB device driver for Android - 3D Touch Technology. Integrating pressure along with X and Y coordinates in Android framework.
* Linux as the development platform and used different toolchain to build and develop drivers.
* Software Automation tools like Jenkins were used.

Company**: Sphere Fluidics Ltd, Cambridge, UK. Aug 2014 - Feb 2017**

Position**: Senior Software Architect**

* Developing Image processing algorithms and User Interface for PicoDroplet Analysis in LabView and .Net – C# for User Interface, Using SDK’s to interface UI.
* Developing User Interface Module to Interface High Speed Industrial Camera using API's and also interfacing with standard Protocols like GigEVision.
* Key member in designing and developing an architecture for new Generation product used to analyse billions of cells.
* Developed USB Device driver to send HID reports.
* Used ARM processor to control other modules and to pre-process the data (PMT)
* Used OpenCV library for developing image processing module.
* Developing GUI to interact with new Generation product in WPF(leveraging MVVM framework). Responsible for designing and developing the application from scratch. Developed database schema and instantiated in Postgres.

Company**: Visual Planet Ltd, Cambridge, UK. Nov-2011 - Aug - 2014**

Projects: **Implemented Virtual Windows Device Driver for USB Touch Screen**

* Designed and develop the application design using Agile Methodologies.
* Used QT Signals/Slots effectively to communicate between the objects.
* Implemented Communication protocol for communication with the embedded processor and Host machine.
* Develop USB module: Responsible for establishing communication with specified VID and PID device.
* Used open source, **SQLITE** database.
* Responsible for designing and developing the complete project.

Project: **Developing Prototype for Multi Touch Algorithms for Capacitive Touch screens**

* Used OpenCV library for developing the algorithm from Raw Data from Capacitive sensor - Played on different Image processing algorithms like Otsu’s, Edge Detection Algorithm, thresholding and filters like SOBEL and Gaussian to check the results.
* Used Canny Edge Detection algorithm to detect multiple touches using filter (Gaussian Filter).
* Implemented algorithm which calculates the Signal - Noise Ratio of Touch Screen Technology.
* Implemented Calibration User Interface and algorithm in Widgets (C++).
* Managed project and also supervised contractors.
* Developed DLL in C to communicate with TouchScreen Driver in Windows OS
* Developed .SO in C to communicate with TouchScreen Driver in Linux OS
* Developed Debian Packages as a standalone Installer for Ubuntu flavour.
* I was responsible for designing and developing the SDK’s which helps the programmer to develop the applications rapidly. Test suites were also developed.

Project: **Developing communication Module in STM32F4-Discovery Board**

* Responsible for developing the firmware which drives low level data communication between the host and Embedded device through USB port.
* USB Device will be identified ad HID and does 2 way transfer.
* Developed Custom USB debugging Software for debugging USB devices.

Project: **Beagle Board Bring-up with Angstrom Distribution**

* Modified SPI module in Angstrom Distribution Of Linux to enable SPI communication between Beagleboard and Daughter board( Daughter Board has Xilinx Chip).

Project: **Implementing Touch Screen Driver on ARM processor**

* Designing and developing the firmware for Touch Screens on BeagleBoard.
* Followed Agile Methodologies to develop Roadmap, to create milestone and perform monthly releases.
* Developed and debugged SPI driver.
* Developing cross platform UI in wxWidgets.
* Designing and implementing DSP algorithms like Palm rejection, Interpolation and detection of Multiple touches.
* Performing C optimization in Firmware and writing Assembly code for the profiled functions.

Project: **Implemented Virtual Windows Device Driver for USB Touch Screen**

* I was responsible for designing and developing the device driver and also developed the roadmap which details the different stages during the development process.
* Understood various protocols in HID protocols in Windows Platform and successfully implemented it.
* While developing the device driver some of the problems occurred was Blue Screen error and memory leakage, they were debugged and solved.
* I did developed KMDF (Kernel Mode Driver Framework) and UMDF (User Mode Driver Framework) driver and as a whole it constitute device driver.
* Used debugging tools WinDbg and developed Package using NSIS script (Open Source).

Company: **Texas Instruments, Northampton UK. Jun - 2010 to Oct – 2010**

Position: **Intern**

Project: **Developing Compelling demos for Texas Instruments**

* Device driver and Application development on Beaglebone, Texas Instruments open source hardware.
* Developed application is aimed to leverage capabilities of components present in Beagle Board, which contains ARM, DSP and SGX graphics processor. The final outcome of this project will be a 3D application, and on sides of 3D application, it will have DSP processed the USB cam and composite cam input and will have decoded video as well. The 3D object will be controlled by the accelerometer and it also spins! And we will have other decoded video as the background. You can start and stop video, change the input video sources and spins the cube from the accelerometer.
* C Language and OPENGL ES graphics library are used to develop 3D application and to communicate with device drivers. I have developed **device drivers for accelerometer, in Linux platform from scratch**.
* This projects aims to understand the design and implementation of whole system which include ARM, DSP and SGX processor.

Company**: Wipro Technologies, India, May. May - 08 to Aug – 09**

Project: **Symbian and Bridge Device Driver on TI DSP**

* Extensive, in depth experience on Texas Instruments OMAP3 as well as OMAP4 platforms for Smart Phones. Worked both on the ARM processor as well as the DSP (C64x) processor in these platforms including the interprocessor communication (IPC) software and Bridge Device Driver.
* Optimized the performance of OMAP3 Bridge Device driver; fixed several bugs in the OMAP3 Bridge Device Driver (Symbian Platform) e.g., strmcopy, DMM and Messaging.
* Customize the TTS and Neo automation tools for OMAP3 Bridge Device driver which saves around ~10 Hrs of time during the code Release process.
* Worked extensively on the next generation OMAP4 platform and the software framework used on this platform.
* Responsible for debugging and developing the complex test cases for RCM (Remote Command Messaging) module on Ducati(OMAP4 Pre Silicon) (Platform Linux and Symbian).
* Responsible for developing the SHIM layer for RCM module on OMAP4 Ducati Side Optimized the Ducati Code Base (and improved the processing speed by xxx See ~10hrs example which is a good one).
* Key member and contributor in a team that developed the test framework.
* Worked on integrating IPCSyslink and Frameworks components to Ducati Bridge and also migrating to BIOS, XDC and CodeGen tools.

Project:  **Symbian Multimedia on TI platform**

* Understood the concept of Multimedia framework in Symbian
* Familiar with audio and video codec’s..

Company**: Texas Instruments, India .Jan-07 to Jul – 07**

Position**: Intern**

Project**: Implementation of H.264 Baseline Profile Decoder on Joule C64x TI DSP**

**AND**

Company**: NV3 Technologies, Bangalore, India,**

Project**: Implementation of H.264 Baseline Profile Decoder on Joule C64x TI DSP**

* H.264 is a new emerging codec for video compression and decompression. It is gaining significant popularity and is being deployed in several products such as portable media players. My goal was to understand the basic concepts related to video compression and in particular H.264 codec.
* Downloaded the free reference source code - JVM reference code. Compiled and ran it on a PC-based C64x simulator using Code Composer Studio (CCS). Measured its performance. H.264 Decoder, based on the JVM reference code, took 859 MIPS to decode a H.264 file to YUV file.
* Validated the functionality of the decoder by testing it using several test video clips to confirm compliance with the standard. We took the encoded file from the encoder (H.264) and then used it in the decoder. Output of the decoder is YUV file which is the raw format. We used a YUV player to display these decoded files.
* Optimized it on C64x platform and measured the performance. For optimization we used Hand Coded Schedule Assembly and Intrinsic Assembly. Using CCS, we identified critical functions that were contributing significantly to overall computation. For most of the functions we did write the whole code in hand coded, scheduled assembly.
* Fixed several bugs while optimizing the code, and validated the output reference code. Some of the bugs were for example the presence of black spots in the chroma component. Others included linking errors with the assembly file and the main project file.
* As a result of my optimization work, demonstrated a **2.27x improvement**; from 859 MIPS before optimization, to 378 MIPS after optimization.

**Audio effect host design (Part Time job Assisting Research Candidate)[Jan – 2010 to Sept - 2010]**

* Audio APIs govern how an audio effect should interact with an effect host. This project involves improving an effect host and its interaction with audio effects within the framework of a 'mother' application.

**Freelance projects for GUI based projects / Web based application**

**Development of Mass Mailing Software and Billing software in C#.**

* Used Sqlite as the database.Leveraged MVVM concepts.Designed database schema.Added functionality like Barcode reader and other custom modules as per the client needs.

**Development of E-Commerce Website using Magento.**

* Customized Magento as per the client needs and performed upgrade to many version including version 2.0. Implemented Payment Gateway module and other modules as per the client needs. Debugged magento modules using xdebug.Deployed Magento ecommerce website in AWS infrastructure. Developed back-scripts using AWS console commands. Provided support for the website maintenance and provided 99.99% uptime. Responded to DDOS attacks carried on the e commerce website.

**Developing Inventory module using Symfony framework.**

* Used Postgres SQL as the database. Designed and developed Database schema as per the client needs.Used Twitter Bootstrap as the front end. Developed API to communicate with Magento framework to update the stocks automatically.Deployed in nginx server.

**Developing Invoice module - Tracking using Laravel Framework.**

* Learning Vue.js to use as front end. Mysql database used as back-end. Queries built using eloquent model. Developing API which would get frequent updates from logistics company.

**Patent published: SYSTEMS AND METHODS**.

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| Application number | PCT/GB2016/051654 |
| Publication date | Dec 8, 2016 |

**Publications** “**H.264 Baseline Implementation Of Decoder Using Joule”** *Vinayaka C. Pawate*, has been published in *30th series Students Projects Programme (Engineering) Technical Record: 2006- the* Indian Institute Of Science, Bangalore INDIA, 2007.

**Achievements**

“**H.264 Baseline Implementation Of Decoder Using Joule”** project was selected and sponsored by KSCST (Karnataka State Council for Science and Technology). KSCST reviews all projects from all VTU affiliated colleges that span 135 colleges and then selects only a few. My project was one of those selected.

**Attended**

* Embedded Training held at Oxford, UK [Jan 2011]
* QT Workshop at London, UK [2013]
* LabView conference(CLUG) at Cambridge, UK
* 12th annual SEI,Architecture Technology User Network (SATURN) Conference held at San Diego, California.[2016]

**Training Undergone**

* Feel Employable: by CLHRD, Mangalore,
* ARM,
* VxWorks
* RTOS concepts
* Code Review
* Debugging Skills
* Undergone Self-Paced training in LabView