**Michael Di Gioia**

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**SUMMARY**

**Michael is highly experienced software engineer with over 20 yrs. of experience. He has excellent experience on heterogeneous parallel framework. He has good understanding of 5G wireless technology.**

**Pernix & Associates, CA. 2008–to present**

**Independent Contractor**

**(multiple contracts)**

**Networking projects:**

**I have worked for Cisco 3 times building the latest high speed networks including the 100 gig video switch.**

**Worked with Baynetworks to build the first Firewall device inside a router and the first Nat engine.**

**I did research for an Advanced new networking design and implementation at Huawei call CCNX .**

**Completed advance testing and development for Qualcomm’s newest Wifi SoC.**

I haveExperience and operational familiarity on **BGP, OSPF, OMP and other network routing protocols.** I have knowledge of network switching protocols: **STP, 802.1[q,s,w], 802.3ae**

I have network security features  experience with(**ACLs, VPN, L2VPN, L3VPN, IPSEC, GRE**)

Experience working in Agile/Scrum environment leveraging tools such as Jira

**load balancer, enterprise wide wireless networking technologies, Software Defined Networking and WAN architecture**

**Was contributor on the first SNMP RFC and built one of the first concentrator based mibs, etc see below.**

**Intel Santa Clara (current):**

Intel America’s Greatest Makers Sr. Mentor for the development of new low power devices with the latest technology from Intel. This Job and others included extensive use of ADB commands with Logcat and other generic tools used in the Android development system to test and debug the system as needed. See below project for Camera 3 development and test.

**Qualcomm, San Diego, CA**

* Oversaw Ice Cream Sandwich port for all the smart phones and tablets for all customers.
* Responsible for memory modifications and sensor driver changes.
* **Wifi** quality performance expert inside Qualcomm defect test team.

**Intel Santa Clara (last year):**

Mobile devices with Linux based Android, Chrome, Windows 8, and MeeGo kernel development.

* Have been working on Android based Research and Development including extensive driver, kernel, system, HAL layer and java application test coding.
* **Intersil (2010 - 2013):**

Most of the work has been done for Intel, Qualcomm, Intersil, Motorola and Nvidia. Bring up of newest Intel development platforms, Qualcomm Snapdragon MSM Development platform, and the Texas Instruments PandaBoard development platform and the Nvidia Tegra!

* **Multiple Contracts (Prior to 2010 ):**

15+ years of experience in system architecture, programming, and embedded level C/C++ development.

Tools include Visual C/C++ experience for RTOS environments like VxWorks, Embedded Linux, uCLinux, WoA and in Windows application environments. Maven, GNU, GCC, GDB, KGDB, ADB, PTRACE embedded, GIT, GERRIT, REPO, CVS, CLEARCASE, R&S **WIFI Equipment**, Greenhils ICE, extensive JTAG with lauderback and many other devices. Inovator Emulators, SIMICS, Matrix, GPS Power analysis tools and many other custom tools. QT R&D. Development for 802.11 and 802.16 WiFi and WiMAX environments.

* Experienced in developing with Perl and Python, code reviewing, testing, performing simulation and performance analysis for embedded systems, TCP/ IP wire line and wireless networks.
* Extensive experience with **Multicore CPUs** including most Book E based PPC cores and others including PPC476FP, Atom Lindroft/langwell, MIPS and **ARM CPU.**
* Built BSPs for **multi core CPUs,** integrated security chips and LTE stack processing chip with Giga Speeds.
* Has extensive experience programming in C & C++ under UNIX/Linux (kernel, driver, helper functions, MMU, networking stack and User space), Windows, RTOS (VxWorks) and Workbench/Tornado. Many years of experience in TCP and IP layer routing internals.
* He is experienced in end to end QoS for 3GPP Long Term Evolution (LTE) version 8, RLC, and RRC.
* Experience with WiFi, UMA/Femtocell and schedulers for Mix traffic (data and real time traffic).
* Experienced in Object Oriented Analysis and code reviews using Lint, McCabe metrics, Rational Purify, Coverity Prevent, PureCoverage, Uncrustify, and other tools.
* He has performed **analysis of the performance for various algorithms** related to TCP protocols for wire line and **wireless networks** and optimizes including TCP-Illinois, Tahoe, Reno for high speed data services for networks. Experience in design and development for network/**wireless models** using many custom and off-the-shelf simulators and equipment including SDL-2000.
* Experienced in Unit, Designer, Regression and Integration Testing.
* He has expertise in CTI (Computer Telephony Integration).
* Experienced in VoIP (Voice over IP) using H.323/SIP Radvision and interdigital Protocol stack. Certified Wind River Tornado Developer.

**SKILLS
Languages:** **C, C++,** UML, XML, VC/VC++, Perl, Python,

**Telecoms / Networking:** QoS, WiMAX, LTE, 1xEvDO, IMS, **CDMA** 1xRTT,GSM VoIP, H.323, Call Processing, PSTN, CTI Application, ISDN, ISUP, SS7/6, Software Radio, IVRS, RSVP, PPP, GPRS, MPLS, RTP, OSPF, mgcp, megaco, SIP, NFS, Client/Server socket , Python programming, IPC (Inter process communication ) and Multi-threading.

**Tools:** RADVision **Protocol stack,** OPNET, Sniff, GreenHills MULTI, ClearCase, CVS, and beyond compare.

**Protocols:** TCP, IP, RLP, UDP/IP, RAT, CCNX, SNMP, SIP (session Initiation protocol), **fixed wireless V5.2** Protocols, RTP/RTCP.

**Non Stop Computing:** **Fault Tolerant parallel processing and fault management, Log management,**

**Network Management:** Configuration Management, BSM (Base Station manager).

**Operating Systems:** LINUX/UNIX/netBsd (SunOS, Sun Solaris, SysV, HPUX), Windows, RTOS (VxWorks), LINUX.

**GUI:** Visual C++ 6.0 and 5.3

**Library:** STL, SSL, ActiveDirectory, and Ldap

**PROFESSIONAL EXPERIENCE**

**Pernix & Associates (multiple contracts) 08-Present**

**Huawei 2013**

**Research Project:**

* Building special platform code for wi-fi and Bluetooth to allow smartphone device location information with better resolution, less hot spots, and quicker calculations to allow real time targeting and information anout customers shopping decisions.
* Using Maven (mvn) toolset to provide additional functionality (Bluetooth) to Stanford Content Centric Networking on Android devices.
* Open fire Junction is used with XMPP Servier/Client for my JxWhiteboard Android NDK/application functionality. NFC and Wifi Direct is used with CCNx, and service Discovery (Avahi, Jmdns, zeroconf, RAT) to directly connect over IP without "infrastructure mode", where the access point acts as a central hub.
* All Wi-Fi Direct devices are able to operate as either a device or an access point.
* Content instead of host names are used for all this new technology I am building.
* Ice Cream Sandwich port for all the smart phones and tablets for all customers.
* Memory modifications and sensor driver changes.

**Intersil**

* Providing I2C sensor drivers (NDK/APP) for many different platforms and OS systems including TI panda Board, QUALCOMM snapdragon and Intel Atom pr2.
* New Linux drivers for isl29011 Light, Proximity, and Camera sensors (Pennwell ISP imaging system) on the new MeeGo OS and Android smartphones.
* Platforms include the latest Intel Atom based development platform, Qualcomm Snapdragon development platform, and TI Pandaboard platform.
* Cisco Providing Unix/Linux Video server/switch consulting. OpenAL base audio stack system development to allow dynamic event/stream management for emergency based VoIP systems.

**Intel Santa Clara**

* Work for the Intel Client development team building customizations of our HW, Linux Kernel and Android system components to create specialized devices for large companies like Dell, Amazon, Motorola and Google.
* Work developing Viper drivers and test code on new silicon test platforms for next generation Android smart phones
* Work on Power Management code to reduce power when using GPS based sensor with Linux serial Drivers.
* Research using SiRF Wifi devices power mgmt device driver buffering to reduce gps chip and core power drain.
* Build CR4 Viper kernel based driver code using Uart/FPGA and DMA I/O power mgmt.
* New Linux project to build Native C++ code, Android Java app for Kernel camera system
* Intel Labs experimentation and platform setup to understand the optimal process to transport live video with RTP over many different parallel transmission media.
* Built Windows DirectShow Filter Graphs for experimentation of video bitstream communications using H264 with SVC (Scalable Video Coding).
* Work on platform for Android like Smart Phone using Meego OS - Embedded Intel Atom.
* Tested, debugged and made Kernel modifications on the necessary source trees to fix issues with integration of new HW and Firmware.
* Setup, corrected problems in HW/SW, and prepared the base platforms for use in our major TI integration camp here at Intel.
* Created test suits for use with the Infinion 6160, AT Modem cmds, and Rohde & Schwarz CMU/CMUgo to qualify their 3GPP/WIFI/BT firmware/HW.
* Physical layout corrections made with wire wrap changes on the PCBs
* **Worked with Team members from China and France on MeeGo**
* Optimized transport card changes needed for Android and MeeGo
* Gerrit based Source repo builds to use the new trees for development.
* Fixed/corrected bugs.
* Worked with external vendors to integrate their Voice processing components.
* Worked at multiple startups, small companies, and maintenance work.

**Green Energy Company**

* Working on Perl and Python programming for OTF I-Digi Instant wireless Board for Graphic UI and control for use in a green energy product.

**Cell Phone Tower Bridge**

**Sr. Consulting Engineer**

* Ported platform to MPC8548E Card with TSEC giga Bit Driver
* Customer has an 802.16 bridge router that using interrupt driver for mega Bit PPC Ethernet. This code was ported to a new poll based Ethernet driver, new HW and Linux Embedded OS for WiMAX capability.
* Tool Chain is GNU and BDI debugger used

**General Dynamics, Scottsdale, AZ Nov’08-Aug’09**

**Sr. Consulting Engineer**

* Provided a provisioning and platform system architecture Government systems design specification for the 2nd release of the platform.
* Extensive use of 3GPP Specifications STD-T63-31.102 V5.14.0 (USIM), ETSI TS 102 221 V5.1.0, 3GPP TR 22.944 V6.0.0 was used including a number of closed GD government documents.
* This specification included local and OTA provisioning. The standard format of the USIM EF found in the InterDigital stack was used with a new CORBA interface to send and receive secure provisioning XML data.
* The design and code focused on Initialization/startup using local fill ports and Over The Air SIP based secure encapsulated key based XML streams.
* Much of the code was built to handle special Software Radio based EF DIR Wi-Fi that hold Software Frequency adaptation tables (Dynamic Frequency Profile), DoveTail Multiplex tables and Secure OTA Update key encryption processing.

**Environment:** C++(using C code with name mangling) GNC tools with Visual Studio 6.0,VC++ compiler & debugger, Custom built SIP based simulator, Describe tool (UML technology), CORBA using Motorola Cobra, multi-threading. InterDigital stack and SDL tools.

**Airvana Jun’08-Nov’08**

**Senior Consulting Engineer**

* Researched. Designed, developed, tested and released a new Radio Network Controller (RNC) subsystem for all of Airvana's current and new multi card platforms.
* This project included two of Airvana's engineers as taking direction from me to complete this project as **team leader reporting to management.**
* The ECC subsystem included both bootstrap and run time code to provide the necessary software error correction to find, fix and report error conditions before and loss of service could happen.
* This involved running on all cards inside the RNC to run HW and SW ECC.
* Using a CORBA factory on the control card, it was able to receive IPC messages from any card to report statistics and alarms to the SNMP Console Manager on the network management station anywhere in the world.
* Since Call control and Text areas of memory were protected, special call processing and memory controller commands were necessary to scrub these areas of memory while calls were being processed.
* Built Corba memory control for call processing in platform group working on firmware and software modification to provide full ECC support on a number of Power PC based boards including MPC5674F,MPC750, MPC905, MPC820 with the Falcon and Harrier Memory Controller chip sets.
* This involves MMU and Memory Controller chip code for Linux and VxWorks.

**Environment:** C, C++, UNIX, Linux, GNU compiler & debugger, Motorola Command line debugger,Describe tool (UML technology), CORBA Call Processing and SNMP programming.

**HP, Cupertino, CA Feb’07-Apr’08**

**Sr. Consulting Engineer**

* SSL/TLS Secure printing Network Server/Client development.
* Components I built are the HP-UX based Multi-threaded server (C), the secure client(C, C++ and .net com objects), the HP-UX PCI driver (Kernel C, WSIO and DLPI, ported from Linux), and their main MFG Server to build these system that hold master Crypto keys (C++). TCP on the HP-UX server had to be modified to handle to heavy load necessary for the number of PC clients each PCI based secure card (GreenHills Multi OS) needed to handle.

**Environment:** C++, Greenhill’s MULTI C++ compiler & debugger, Describe tool (UML technology) Linux.

**Cherry Corp., WI Aug’06-Jun’07**

**Senior Consulting Engineer**

* Porting/Building C++ USB based platform keyboard application on Linux and Windows.
* Extensive use of Visual Studio 2005/6.0. SUSE 9.2 Linux 2.6 kernel.
* Testing for customer.
* Expert with .NET C#, VS 6.0 & 2005, Wise for Wind.
* Embedded firmware development on 38K2 MPU.

**Environment:** 38K2 Renesas Technology, C, C++ compiler & debugger, LINUX, PC Sniffer, multi-threading, Renesas embedded ICE system and Pod.

**Motorola Corp., IL Dec’05-Aug’06**

**Sr. Consulting Engineer**

* 3GPP Cell Phone R&D Libertyville IL– Program in Perl/C Radio Resource Control & RLC Call setup/drop processing and Analysis. Modification of AI tool to diagnose defects with the Network of User End.
* In Schomburg IL in the Land **Mobile** Products Sector - Private Radio Networks Engineering - Contract position involves the development, debug and test of new features of Motorola's new line of Radio Frequency Site Repeaters and routers.
* Assignment included development using Rational Rose XML, C++, C, Metrowerks Code Warrior debugger, SNMP, ClearDDTS Bug Mgmt system, ClearCase source control system, and PowerPC.

**Environment:** C++, Metro Works Code Worrier C, C++ compiler & debugger, VxWorks, Describe tool (UML technology), Windriver’s Sniff, Beyond compare.

**Planet Aid Oct’04-May’05**

* Developed a portable hand held device used for database info distribution.

**Ip TelPhone Sep’03-Oct’04**

* Made changes to Core code in phone used as a test device for VoIP.

**ACTR Sep’01-Jul’02**

* Developed a number of new Database systems for a company in Russia.

**NMS Oct’00-Jun’01**

* Invented the first Cell Phone IP Gateway with SNMP based command and control for a large corporation in Japan, using a UNIX based OS on a Compact PCI based dual redundant platform.

**Mapletree Jul’00-Oct’00**

* Worked to move platform from strong ARM processor to a MIPS RISC RC32334.

**Amoeba Oct’99-Jun’00**

* Developed the test plans and simulated many different environments using the new IpTelPhone invention.
* In 2000 this device became part of a contract with Amoeba, router communications firm.

**Pernix Jan’00-Oct’00**

• Developed a smart telephone that could communicate over the Internet using Linux and BSD UNIX code tools/kernel. This device was more powerful than most PCs with Motorola 68K Cold Fusion Processor and could operate as a media gateway over VoIP networks. It became very useful in testing the new protocols like H.248 (Megaco).

**Avici Apr’98-Nov’98**

* Terabit Switch/Router Research, design and development of the next generation, high speed switching fabric, distributed control devices.
* Significant developments were made in hardware and software to produce the MPC860 based switch control unit. Several drivers were developed to perform I2C based control, route server communications, distributed communications to multiple controllers, line card communications, detection and alarm of critical conditions, and SNMP based proxy agent management.
* **Provided management and technical leadership** of a Pernix Technology team at the client’s laboratory facility.
* Used VxWorks on a new MPC860 node controller.

**Bay Networks Nov’97-Apr’98**

* Completed the research, design and development of a Network Address Translation (NAT) product.
* Developed to be optionally configured and used in any size router.
* Responsible for the **management and technical leadership** of a Pernix Technology team working at Pernix’s laboratory facility.

**Bay Networks Sep’95-Nov’97**

* Completed the research, design and development of a packet filter based FireWall product. Software and firmware was developed for the kernel Data Path component used inside all routers.
* A network packet based Virtual State Machine was developed to provide easy and effective implementation of dynamic security policies that could be created by secure operators anywhere within the secure domain.
* In addition, our built in support of CheckPoint’s Daemon protocol and GUI configuration tools, executed on standard MS-Windows or Unix systems, allows customers to flexibility create, modify, and send security policies to any secure router within the security domain.
* The most important success of this development was the speed by which all packets could be cracked, processed through the Virtual Machine (armed with an embedded security policy), reassembled on router data paths.

**Multilink Corp. and Codex (Motorola) Sep’94-Sep’95**

**Standard MVIP Voice/Data Modem**

* Completed the Systems and Protocol research and design specification of a Voice and Data router/modem concentrator.
* The proprietary Modem Mux Protocol (MMP) was invented and specified for this new generation TCP/IP based LAN product used by the telephony industry.
* The most significant technical challenge included the integration of the new protocols into the standard System Signaling 7 (SS7).
* Since any one of 24 64kbit channels could be used for simultaneous voice and data information over any one of 4 T1 trunks.
* Switching between the modem bank outbound and the T1 trunk lines upstream required careful attention to all boundary conditions including startup and shutdown SNMP Management developed.

**Racal Sep’91-Sep’92**

* Successfully completed one year of full time work to design, build and test SNMP V1 agent firmware for a single card network management module using the Intel 80386 microprocessor.
* Most of the work involved C-programming.

**Digital Equipment Corporation Mar’91-Dec’93**

* My company (ThinkTek Consulting) was given a contract to produce a specialized Common Management Interface Protocol (CMIP) tester for the release of their DECnet/OSI Phase V network management product. This instrument provided an X-Windows/Motif control panel based user interface that automatically tested Digital's Digital Network Architecture (DNA) CMIP Management Language (CML) with the current OSI based CMIP language.
* Also worked with OSF and Netrix Groups.

**Sequoia Systems Sep’88-Mar’91**

* Implemented 3 communications subsystems to run on TOPIX (fault tolerant UNIX) that provided general purpose communications for X-Windows, NFS and TCP, providing redundancy switching and fault detection.

**GTE Government Systems**

**Principal Engineer 5 years**

* Systems and software R&D engineering R&D-Telephony, ISDN, Packet Switching, X.25 & LAN

**EDUCATION**

M.S. Computer Science

University of Central Florida

B.S. Math/Electrical Engineering

Columbia University

Certifications

Certified Wind River Tornado Developer