

Paul Rimmer
(403) 616-0607
23 Heritage Cove
De Winton, AB, T0L 0X0
paul@ronin-tech.com

I am an enthusiastic, highly productive, team player with strong engineering, problem solving, communication and leadership skills. Fully trained in structured software development, technically proficient, self-disciplined, articulate and able to learn and apply new concepts quickly.

WORK EXPERIENCE

Novatel GPS: Consultant, Calgary (December 2014 to February 2015)

- Integrated open source firmware for CAN bus functionality (can-utils/iproute2) to AgLeader board.
- Developed software to route data using serial USB and CAN bus between 2 boards to profile performance with and without CONFIG_PREEMPT_RT Linux kernel patches.

General Dynamics Canada: Consultant, Calgary (April 2012 to Present)

- Developed new MPC5200 based radio control functionality for Canadian Armed Forces Comms Selector Box, along with a shell based OI emulator for remote development/debugging.
- Developed alarms subsystem for new Canadian Forces Combat Net Radio, Enhanced (CNRe).
- Fixed endian issues between various processors and subsystems on CNRe project.
- Improved build times from 2+ hours to 0.5 hours on British LE TacCIS project using ccache and distcc.
- Brought up new PPC 8260 ABOX lid CCA with HW/FPGA team and modified legacy FW to run on it.

Novatel Wireless: Consultant, Calgary (March 2007 to January 2012)

- Member of the Calgary Firmware team working on adding new functionality and debugging issues with Arm 9, Arm 11 and TI OMAP processor based 3G/4G modems and mobile Wi-Fi hotspot devices utilizing Qualcomm's cellular stack and proprietary OS, and the Linux OS.
- Wide variety of work included developing/debugging functionality from web interfaces, AT and serial diagnostic commands down to U-Boot and flash, file system and USB drivers under Linux and Qualcomm's proprietary OS.
- Developed Perl build scripts with optional GUI's to hook into PVCS and Perforce version control systems to generate internal and external releases and to automate merges of code drops from Qualcomm.
- Setup a continuous improvement build server to reduce time between finding and fixing build errors on various projects using the Jenkins open source project and Perforce and Git version control system.

General Dynamics Canada: Consultant, Calgary (October 2004 to December 2006)

- Provided technical direction and development expertise for the implementation of the LES for Canadian Military LCSS program to provide a bridge/router/switch between Ethernet devices and the proprietary Iris vehicle network.
- Work included: adding custom functionality to u-Boot boot loader, debugging Linux kernel on new target, porting drivers from 2.4 to 2.6 Linux kernel, building web pages using shell based cgi-scripts to provide real time device information, developing set of startup Linux scripts to configure device as needed and building multiple custom applications running under Linux OS.
- Evaluated multiple OS's and provided a paper detailing selection criteria and final recommendation (ELDK from Denx) for a new LAN Ethernet Switch (LES) for the Canadian military.

ATVFrontier.com: Webmaster, Calgary (May 2004 to December 2008)

- Built and maintained atvfrontier.com for an online ATVing community. Scaled it as popularity increased until sold for its ad revenue. Purchaser could not maintain and site died.
- Developed custom dfmaps module requiring PHP, JavaScript and MySQL capabilities to integrate Google Maps into the open source Dragonfly Content Management System.

General Dynamics Canada: Consultant/Team Lead, Calgary (October 2001 to April 2004)

- Hired into the firmware group to lead a team to implement portions of the firmware aspects of the Bowman

Paul Rimmer
(403) 616-0607
23 Heritage Cove
De Winton, AB, T0L 0X0
paul@ronin-tech.com

communications system for the British army.

- Enabled aggressive schedule to be met by recommending the appropriate people and working with them in a close teamwork environment to meet the project milestones.
- Integrated Greenhills runtime and associated toolset on Coldfire architecture target hardware.
- Was made responsible for, and then met, all requirements for first firmware milestone from a technical, problem solving standpoint.
- Made proposal to management to change the firmware development plan for one of the hardware components resulting in cost and schedule savings.
- Designed ICE/Broadcast flash capabilities taking CCA flash times down from approx. 20 to 3 mins. and giving the ability to load all CCA's of one type simultaneously, realizing huge savings in time and money.
- Designed and implemented Broadcast and Heartbeat protocols to replace legacy ones thus reducing worst case processor overhead from 90% to 30% load.
- Key member of an R&D design team that produced a new architecture for future GD firmware applications utilizing open source OS's, protocols and development tools. Key goals that were achieved included: extendibility, maintainability and modularization via abstraction of key interfaces.
- Using new SW architecture, an open source OS (Linux based uClinux) and existing hardware we were able to rapid prototype a system providing large pieces of existing system functionality (and more) with a fraction of the resources.

Wi-LAN Inc: Consultant/Team Leader, Calgary, (June 1999 to October 2001)

- Developed software for a prototype FPGA based, wireless, **Ethernet** bridge, including development of flash, serial, Ethernet, DMA, FPGA, DSP and other peripheral drivers for the onboard Motorola **PPC 860**.
- Designed, developed and debugged host processor interfaces to **Xilinx FPGA** based Reed Solomon forward error correction device and **TI 6211 DSP**.
- **Led team** of developers responsible for the MAC FW for the OFDM based Ethernet bridge product that designed and implemented a proprietary, polling based, RF protocol for a fixed wireless network.
- Debugged prototype hardware using oscilloscope, logic analyzer and multimeter.
- Used **BDM** and **JTAG** debuggers (**Singlestep**, **Code Composer**) to integrate software on target hardware.
- Convinced incumbent developers and management to integrate a COTS RTOS (Precise MQX) into product.
- Interviewed and recommended personnel for hiring as software team size grew from 2 to 20 people.
- Encouraged adoption of SW processes including: peer reviews, version control, SW defect/change tracking.
- Investigated, acquired and became proficient with development tools including: **Smartbits** traffic generators, HP Integrated Logic Analyzer/Scope/Emulator and Sniffer traffic generation and capture SW.

Computing Devices Canada: Senior Firmware Engineer/Consultant, Calgary (Nov. 1993 to June 1999)

- Senior member of the **HIDS firmware** team working on several portions of the **IRIS Communications System** for the Canadian Department of Defense.
- **Led** the Network Infrastructure **problem resolution team** responsible for analyzing and solving all problems related to the HIDS firmware infrastructure during key **System Integration** periods.
- Member of the small team responsible for implementing the **LAN/LDN** firmware for the Iris Project.
- Implemented proprietary **protocols** to support **LAN Management** and **data routing** in order to provide rapid determination of LAN **topology** and a **robust** and **survivable** network.
- Implemented algorithms to handle Simplex and Duplex devices residing on the same LAN, as well as having to support a **legacy** device that did not support new protocols and routing (NSR).
- Developed the Host portion of a **shared memory**, **multiprocessor** interface between a 68020 host, TI C25 Fast Packet Switch DSP and TI C52 Voice Processor DSP that allows the Host to initialize, control and act on responses from the DSPs.
- Developed Host firmware to control the **virtual circuit** routing on the Fast Packet Switch.

Paul Rimmer
(403) 616-0607
23 Heritage Cove
De Winton, AB, T0L 0X0
paul@ronin-tech.com

- Verified the interface to Trunk Network Interface Cards developed by subcontractors.
- Designed, implemented and integrated the **man machine interface** firmware for all aspects of a User Control Device from **telephony, radio, intercom** and **menu** applications to **Keyboard, Display** and **Audio** interaction and control.
- Developed **device drivers** for the User Control Device including the display, serial port and keypad.
- Developed code on a **UNIX** system using **Rational Apex** environment and **VADS** Ada compiler and kernel, then used workstations to interface to Emulators and debug code on the Target.
- Experienced in debugging down to the compiler generated **assembly** level in own code and into system calls inside the kernel.
- Familiar with the issues involved in a **multithreaded**, real time environment including **preemption, task prioritization, data protection** and **ISR compatibility**.
- Provided informal supervision and guidance to several junior software engineers.
- Used **Object Oriented analysis, design and programming** techniques to develop software.
- Proficient in configuring and using development tools such as **in-circuit emulators, logic analyzers, oscilloscopes, terminal servers** and **network sniffers** for target integration.
- Developed Tcl/Tk, expect, sed and awk scripts to perform automated testing of the firmware as part of the integration and problem resolution process.
- Produced documentation for software requirements and design using military standard **2167A**.
- Received **Secret, NATO** and **COMSEC** security clearance levels.

TECHNICAL EXPERTISE

- Embedded Operating Systems used include Linux, Greenhills Software runtime, Qualcomm Brew, Precise MQX, Rational VADS and home grown.
- Language experience includes Ada, Assembler, Basic, C, C++, Fortran, JavaScript, Pascal, Perl, PHP, Python, VB Script and *nix shell scripting along with Tcl/Tk, Expect, sed and awk. Have developed SW/FW from high level applications to low level HW device drivers/ISR's.
- Processors/cores used include Arm9, Arm11, TI OMAP, many Motorola PowerPCs , 680X0. Coldfires and Intel 8085.
- Trained in UML, code inspection peer reviews, meeting moderation process, unit testing and configuration management (sourcesafe, cvs, svn, PVCS, Perforce, git).
- Provide consulting expertise in various IT fields such as web, email, security, networking etc.

EDUCATION

- B. A. Sc., Electronic Systems Engineering, from the University of Regina, 1993, with co-op program.
- Researched, designed and built the hardware and firmware for a **remote, weather data acquisition unit** for fourth year thesis that won the 1993, **Faculty IEEE award**.
- Graduated from Miller High School, Regina, in 1985, at age **16**.
- Began High School at St. Edward's College in **Liverpool, England**, on an **academic scholarship**.

ACTIVITIES AND INTERESTS

- Enjoy ATVing, soccer, camping, fishing, reading and geek stuff.
- **Owner** of Ronin Technologies Inc. embedded software engineering consulting company formed in 1997.

REFERENCES: Available Upon Request