

# DANIEL FOISY P.ENG

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## EXPERIENCE

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### General Motors Canada

#### *Engineering Specialist – Energy Systems*

2010-present

- ◆ Architected, designed and manufactured an embedded rapid prototyping system with similar capabilities as commercial systems but at 2-5% the cost. Tested as battery management system allowing multiple Chevrolet Volt batteries to be paralleled and connected to the electrical grid for demand-load time shifting and power islanding.
- ◆ Developed electrical power grid to vehicle communications strategies to optimize Volt charging characteristics using Smart Grid technologies (Zigbee, SEP, PLC).
- ◆ Consulted on a variety of hardware and software projects, as well as mentoring colleagues in embedded systems design, programming and business (marketing, business case preparation, etc.)

By applying my extensive hardware and software experience, I have been able to develop innovative and cost-effective solutions for the Electrical Systems, Infotainment & Electrification teams.

### A Bit Embedded

#### *Consultant*

2008-2010

- ◆ Worked with international companies to develop innovative products and embedded systems, with a focus on small, hand-held ARM-based Linux computer systems.
- ◆ Helped clients define product requirements and specifications, sourced components and manufacturing facilities (including overseas), designed and manufactured prototypes using Design for Test and Design for Manufacturing methodologies, ported operating systems to new platforms and developed application software.
- ◆ Technologies incorporated into designs include ARM 7/9/11/M3/M4/A8 processors, TFT touch LCDs, 3G cellular, Zigbee and 802.15.4, 802.11b/g, Bluetooth, camera sensors, Ethernet, USB, Lithium ion batteries.

My technical and project management skills allowed me to successfully address challenges, while working on a wide range of products and with a variety of clients.

### Virtual Cogs Embedded Systems Inc.

#### *Co-founder and President*

2007-2008

- ◆ Led start-up company to almost \$100K in first-year sales developing and manufacturing ARM processor based single board computers.
- ◆ Responsible for developing the company's strategic vision, marketing, customer relations (including website/webstore development, wiki/product documentation), and financials (accounting, funding), as well as product design, development and manufacturing.

Running a small company taught me business growth and management skills, as well as the importance of customer relationships.

### University of Toronto

#### *Manager, CanX Spacecraft Programs*

2003-2006

- ◆ Managed a team of engineers and graduate students to design, build and operate five small, highly integrated scientific and engineering research satellites.
- ◆ Responsible for project management (scheduling, budget, resource allocation, and contractor/client relations), systems engineering (architecture design, interface control, engineering budgets, and FMEAs) and personnel management (leadership, mentoring, and skills/knowledge development).
- ◆ Implemented quality control mechanisms, such as weekly code reviews, team coding, revision control and internal/external subsystem peer reviews.

Managing multiple, concurrent projects allowed me to exercise and refine my project management skills and systems expertise.

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## EXPERIENCE (Continued)

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### ***Spacecraft Computer Engineer***

1999-2003

- ◆ Developed, integrated, tested and debugged satellite hardware and software modules for the MOST microsatellite (Canada's first space telescope) and its three ground stations.
- ◆ Developed architecture for world-wide automated network of ground control stations.
- ◆ Designed and coded software for the MOST main satellite computer and CCD controllers, as well as ground station software.
- ◆ Generated systems design documents and test plans and procedures.
- ◆ Designed and built space-rated computer and power systems for CanX-1, CanX-2, CanX4/5, UniBRITE and BRITE Austria satellites. Invented mission enabling technology, a small, low power 2-dimensional sun sensor.

This experience drew significantly upon my strong electronics and programming skills, as well as helped me to develop my technical problem solving abilities.

## EDUCATION

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### **University of Toronto, Ontario, Canada**

*Masters of Applied Science – Computer Engineering*

1998-2000

- ◆ Thesis: "Specification and Design of a High-Speed Simulation and Control System."

*Bachelors of Applied Science – Computer Engineering*

1994-1998

- ◆ Chair of Computer Engineering Club, represented more than 600 undergraduate students.
- ◆ Co-founder of the Bluesky Solar Racing Team, a student-run project to build a solar-powered car for international competitions with a budget of \$200 000 (raised through sponsorship.)

## TECHNICAL SKILLS

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- ◆ Schematic capture and multi-layer, high-speed printed circuit board design using a variety of design packages. *Designed a 720MHz Cortex-A8 based hand-held computer with 256MB FLASH, 128MB LPDDR, GPS, 3G cellular, Wifi, Ethernet and video input/output capabilities.*
- ◆ Embedded C/C++, embedded Linux, assembler using a variety of microprocessors and microcontrollers: ARM7, ARM9, ARM11, Cortex-M3, Cortex-A8 from Atmel, NXP, Freescale, TI, ST; Atmel AVR; Motorola 68K; TI TMS320Cxx; Microchip PIC. *Wrote all the application software for the MOST satellite main computer which is responsible for radio communications, telemetry collection, long term data storage and file transfers. Developed a multi-threaded RTOS for ARM7 and ARM9 spacecraft computers.*
- ◆ Qt 4.8; Visual C++ (sockets, GDI, MAPI, serial ports, user interfaces, real-time code). *Wrote a 25KLOC cross-platform schematic-entry program using Qt.*
- ◆ FPGA and PLD design using Verilog and schematic capture for Altera and Xilinx FPGAs and PLDs. *Designed an EPLD based error detection and correction memory controller for satellite main computers and an FPGA-based 14Mpixel satellite telescope camera.*
- ◆ Excellent debugging skills using logic analyzer, oscilloscope, and in-circuit-emulators. *Debugged MOST CCD control electronics, as well as MOST's off-the-shelf RTOS and main computer while MOST was in orbit.*
- ◆ Surface mount soldering skills. *Ability to solder most package types, including QFN, 0.4mm pitch TSSOP and resistor/capacitor packages down to 0201 with soldering iron, heat gun and microscope.*
- ◆ Mechanical design using Solidworks, SolidEdge, and Alibre. *Designed suspension, braking and steering systems for the 1997 and 1999 (award winning) University of Toronto solar cars as well as electronics enclosures for various clients.*
- ◆ Matlab, Simulink and Real-time Workshop. *Developed a rapid prototyping system for embedded software development.*

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## HOBBIES AND INTERESTS

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- ◆ Received private pilot's license (150 hours flight time)
- ◆ Home renovations and woodworking
- ◆ Ultimate Frisbee and running
- ◆ Gourmet cooking (especially desserts)
- ◆ Reading over a dozen monthly periodicals, including Scientific American, Inc., Canadian Business, and various trade, woodworking, cooking and parenting magazines
- ◆ Developing open-source software
- ◆ Piano playing (self-taught)

## LANGUAGES

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- ◆ English: spoken, reading, writing. Excellent presentation skills (previously a night school instructor).
- ◆ French: spoken, reading.