

# Noel Burton-Krahn, M.Sc.

noel@burton-krahn.com

cell: (250) 888-0864

1101 Hadfield Ave., Victoria, BC, V9A 5N6, Canada



## Education

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M.Sc., Comp. Sci., University of Victoria

(Victoria, BC, 2002)

B.Sc., Comp. Sci./Math (honours) University of Victoria

(Victoria, BC, 1994)

## Skills

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### Software Development

Over 25 years of experience developing software for Linux and Windows in Python, C/C++, Java, C#

Machine learning	Caffe, TensorFlow, Keras, scipy, Matlab, deep learning, genetic algorithms
Distributed Systems	Docker, Kubernetes, AWS, OpenStack, Elixir, Go
Video, 3D	OpenGL, Threejs, custom encoding and realtime playback
Linux Kernel	virtual memory management and process migration
Web applications	Django, Phoenix, JavaScript, Threejs, jQuery.
Networking	TCP/UDP, STUN, HTTP, SSL, SDN.
Databases	PostgreSQL, MySQL, SQLite, IBM DB2, Oracle, MS SQL Server
Development process	Agile, Git, Subversion, unit testing, documentation, project estimation, requirements gathering, leadership, mentoring.

### Machine learning, Applied Mathematics and Signal Processing

Implemented machine learning algorithms using deep learning and genetic algorithms for biomedical signal processing and game AIs. Designed algorithms for compression, filtering and feature detection for video, voice, images, and medical signals (ECGs). Designed lossy and lossless compression algorithms. Implemented neural networks, simulated annealing, genetic algorithms. Signal filtering with wavelets, FFT, FIR and IIR filters.

### Software Development Lifecycle, Communication, and Leadership

I am very familiar with agile methodology: sprints, continuous integration, version control, and code reviews. I have also worked on large contracts with formal requirements gathering and execution. I have been a business analyst, team leader, and mentor.

## Work Experience

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**Clinezeman** – Data Scientist *(Victoria, BC, 2017-present)*

Developed machine-learning application for biomedical signal processing: Matlab, Python.

**Cisco (formerly Piston)**– Distributed Systems Engineer *(Victoria, BC, 2013-2017)*

Developed System control software for OpenStack Clusters, SDN, and virtualization

**Sierra Systems** – Systems Integration Specialist *(Victoria, BC, 2012-2013)*

Analyzing, designing, and developing enterprise systems integration software. Java, Groovy.

**Clover Point Cartographics** – Developer *(Victoria, BC, 2011-2012)*

Developed ArcGIS server application for Elections BC: ArcGIS, Oracle, Python, C#

**Telocate Systems** – Developer *(Victoria, BC, 2010-2011)*

Developed Google maps application for remote device tracking: Flex, Python, Twisted, PostgreSQL

**Eightfold Logic (formerly Enquisite)** – Senior Developer *(Victoria, BC, 2008-2010)*

Developed web application in Flex, Perl, and MySQL for search engine analytics.

**Sierra Systems** – Developer, Analyst *(Victoria, BC, 2007-2008)*

Defined system specifications and developed application in Java running under WebSphere on a Z/OS mainframe with DB2 database.

**Kodak, Inc** – Developer *(Victoria, BC, 2006-2007)*

Worked in a team developing a web portal for commercial printers in C#, Java, IIS.

**Gatekeeper Systems, Inc** - Developer *(Abbotsford, BC, 2003-2006)*

Developed a Linux-based portable digital video surveillance system, and a Windows video playback application using VB.NET, C/C++, Perl, OpenGL, SQLite.

**HotSwap Network Solutions** – Owner *(Victoria, BC, 2002-2003)*

I have developed several applications on my own.

**BKBox** A Linux-based office server that provides OpenAFS for remote file access, secure IMAP email access, a web server, and acts as a network firewall/gateway.

**HotSwap** A Linux kernel enhancement that replicates running servers on independent computers for instant seamless failover, preserving TCP connections.

**NatNix**      A firewall-tunneling peer-to-peer VPN in C++ for Linux and Windows.

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**GVRD – Consultant, Developer** **(Vancouver, BC, 2002-2003)**

Developed a web-based financial calculator using C#, .NET and MS SQL Server.

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**Kronofusion - Lead Developer** **(Vancouver, BC, 2001-2002)**

Developed Kronofusion's remote desktop access program. This included C++ firewall tunneling encrypted TCP servers, and a complete mod\_perl application for HTTP access to files, Outlook, Express, and virtual desktop sharing (similar to VNC or PC Anywhere).

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**Mercurial Communications - Chief Technical Officer** **(Victoria, BC, 2001-2002)**

As CTO, I recommended technical solutions and managed projects.

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**FaxPC - Senior Linux Developer** **(Vancouver, BC, 1999-2001)**

Developed a Linux/Gnome fax viewing application, a Windows fax viewer, and an Apache/ASP fax-to-HTML web application.

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**GEMS, ITSD, BC. Gov - Linux Developer** **(Victoria, BC, 1998-1999)**

Worked on an Apache/Perl/MySQL application for BC government program listings.

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**CardioComm (formerly Harley Street Software) -** **(Victoria, BC, 1994-1998)**  
Windows Developer

Developed Windows software for ECGs using C/C++, Visual Basic, MFC and OLE. I have worked on many projects at Harley Street from ActiveX ECG controls to ECG signal processing.

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**Power Measurement, Ltd. - Co-op Software Engineer** **(Victoria, BC, 1993)**

Developed real time communication software to communicate with a power meter. The software was developed in C++ under MS Windows.

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**Pacific Forestry Center - Research Programmer** **(Victoria, BC, 1992)**

Developed an expert system to integrate and interpret remote sensing data, image processing packages, GIS, and modeling software for forestry applications. The expert system was developed in Prolog on Sun Sparcs. I became familiar with GIS and image processing packages such as PAMAP, Grass, and Khoros.

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**Dominion Radio Astrophysical Observatory (DRAO) –** **(Penticton, BC, 1992)**  
Research Programmer

Designed and developed software to simulate a hardware correlator used to combine the signals of radio antennae. The simulation was developed in Matlab and C and ran on Sun Sparc stations and IBM RISC 6000s.

## Publications

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**US Patent #20,080,208,711** *(Kodak, Inc, 2008)*

“Print Pricing.” Calculating print pricing with online spreadsheets.

**US Patent Application #2004/0153,709** *(Burton-krahn, Inc, 2004)*

Method and apparatus for providing transparent fault tolerance within an application server environment.

**HotSwap -Transparent Failover for Linux Servers** *(USENIX LISA XVI, Nov 2002)*

Technical details of HotSwap’s ability to replicate server’s internal memory state and external network state.

**US Patent #5,758,654** *(Harley Street Software, June, 1998)*

“ECG P-QRS-T Onset, Offset and Peak Detection Method and Apparatus.” An algorithm for detecting features in ECG signals.

## Awards

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**NSERC Operating Grant No. A7847 National Research Council, IRAP Project No. 42370w.** *(Harley Street Software, 1995-1997)*

Research grants for developing and ECG feature detection algorithm. Total approx. \$750,000 for project development

**NSERC Undergraduate Research Award** *(UVic, May 1991)*

Summer student research grant for working at UVic.

## References

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*Contact information is available on request*

Forrest Carpenter            Cisco

Yagmur Akbulut            Cisco

Geoffrey Espin            Gatekeeper Systems