Michael Bandsmer

Current Address	*Permanent Address*
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Education

- **University of Victoria**, Victoria, BC. Completed my *Masters of Applied Science* degree in Electrical Engineering (Communications, Error Control Coding, Cryptography) in December, 2001. **GPA 9.0 out of 9.0**
- **University of Victoria**, Victoria, BC. Completed my *Bachelor of Engineering* degree in Computer Engineering in April, 1999. **GPA 8.75 out of 9.0**
- **University College of the Fraser Valley**, Abbotsford, BC. Graduated with *Associate in Science* diploma in 1995. **GPA 4.22 out of 4.33**
- **Columbia Bible College**, Abbotsford, BC. Graduated with *music diploma* in 1993.

Work Experience

Hardware & Firmware Design Engineer   Mar. 2002 – Present
Power Measurement;   Victoria, BC
- Developed embedded real-time serial communications drivers and fast ethernet drivers for an advance digital power meter based on Motorola's MPC860 microprocessor.
- Debugged parts of various schematics and printed circuit boards, including circuitry for analog I/O, serial communications, and real-time clocks.

Design Engineer   May 1999 – Aug. 1999
IVL Technologies;   Victoria, BC
- Designed and developed firmware for IVL's state-of-the-art vocal harmony-processing product, in C. Hardware simulation was done using MS Visual Studio 97.

Jr. Engineer (co-op)   Sep. 1998 – Dec. 1998
IVL Technologies;   Victoria, BC
- Wrote a custom serial virtual device driver (VxD) for Windows 95/98 to communicate at custom baud rates through high-speed serial cards.
- Designed, built, and tested a hardware prototype for a MIDI to serial adapter.
- Wrote various Windows 95 applications using C++ in MS Visual Studio 97.

Embedded Firmware Developer (co-op)   Jan. 1998 – Apr. 1998
IVL Technologies;   Victoria, BC
- Developed and tested firmware for the user interface of a new vocal harmony-processing product, using C and 8051 assembler.

Software Developer (co-op)   May 1997 – Aug. 1997
Harris, Wireless Access Division;   System Software;   Calgary, AB
- Designed, implemented, and tested a standalone Windows application which performed automatic software upgrades, using Java and C++.
- Designed and implemented the GUI for the application.

Jr. Software Engineer (co-op)   Sep. 1996 – Dec. 1996
Glenayre R. & D. Inc.;   Operating Systems and Networking;   Vancouver, BC
- Programmed and tested a real-time RPC/portmapper server supporting TCP/IP and UDP/IP.
- Implemented and tested a multithreaded, real-time congestion control API for an interprocessor datalink.
- Designed, implemented, and tested various other software modules for a real-time system.

Localization Programmer (co-op)   Jan. 1996 – Apr. 1996
Sanctuary Woods Multimedia;   Victoria, BC
- Created German and French versions of CD-ROM adventure games, written in C.
- Improved and created some tools used in the localization process.
- Was placed in complete charge of the programming aspect of localization two months into the job.

Other jobs (part-time)
- Physics tutor: Taught physics up to a first-year university level; individual instruction only.
- Accompanist: Accompanied (on piano) various choirs, singers and professional instrumentalists.
- Farm worker: Performed many miscellaneous jobs as needed on a raspberry farm.

Computing Experience and Equipment Operated

- Languages: C/C++, VHDL, Java, Turbo Pascal, various assembly languages, Modula 2
- Operating Systems: AMX, MQX, VxWorks; Unix, Windows, MS-DOS, Mac OS, VMS Vax
- Source Code Control: Perforce, MS Visual SourceSafe, sccs, Continuus
- Software: Maple, Matlab, MS Visual Studio, AutoCad, MS Word and Excel
- Other Equipment: Oscilloscope, Logic analyzer, Microprocessor emulators, Soldering iron,
                                Multimeters, Woodworking tools

Examples of Hardware Design Experience

- Debugged parts of various schematics and printed circuit boards at Power Measurement, including circuitry for analog I/O, serial communications, and real-time clocks.
- Designed and tested a printed circuit board for a MIDI to serial adapter at IVL.
- Designed and implemented a basic pipelined CPU using a Xilinx FPGA.
- Designed a hardware quasi-cyclic decoder in VHDL.

Examples of Programming Experience

- Developed real-time embedded serial communications drivers and fast ethernet drivers at Power Measurement for an advance digital power meter based on Motorola's MPC860 microprocessor.
- Developed and tested embedded firmware at IVL; testing and debugging was done with an 8051 in-circuit emulator (ICE) and a ROMulator attached to a PC.
- Programmed and tested a custom serial port virtual device driver (VxD) for Windows 95 at IVL.
- Developed and tested various Windows 95 applications and modules at IVL.
- Designed and implemented modules for a multithreaded, multi-tasking, real-time paging switch at Glenayre.
- Designed, implemented, and tested a complete Windows application using Java, at Harris.
- Debugged and created C/C++ programs at Sanctuary Woods Multimedia.

Additional Skills and Achievements

- Courses taken include communication theory, error control coding, cryptography, and mobile communications.
- Developed the fastest known algorithm for decoding LDPC codes over fields $GF(2^m)$.
- Presented seminars on RSA and elliptic curve public-key cryptography, as well as quantum computing.

- Have knowledge of written and spoken German.
- Have basic knowledge of drafting and woodworking.
- Achieved my A.R.C.T. (Associate of the Royal Conservatory of Toronto) in piano performance with a mark of 91; was selected to compete in the BC. provincial music festival in 1992.

Biographical Information

- Canadian citizen, born 1973.

Publications

- M. Bandsmer, T.A. Gulliver, V.K. Bhargava, "Efficient Decoding of Low Density Parity Check Codes and Irregular Repeat Accumulate Codes over GF(2^m)", submitted to *IEEE Transactions on Information Theory*.
- M. Bandsmer, "*Efficient Decoding of Low Density Parity Check Codes and Irregular Repeat Accumulate Codes over* GF(2^m)", Master of Applied Science Thesis, University of Victoria, Dec. 2001.
- M. Bandsmer, T.A. Gulliver, V.K. Bhargava, "A Fast and Stable Direct-MAP Implementation of Turbo Decoding", *Proc. 7th Canadian Workshop on Information Theory*, pp. 20-23, Vancouver, Canada, June, 2001.
- M. Bandsmer, V.K. Bhargava, T.A. Gulliver, "A Comparison of Quasi-Cyclic Decoder Implementations", *Proc. IEEE Canadian Conference on Electrical and Computer Engineering 2000*, pp. 280-286, Halifax, Canada, May, 2000.

Honors and Awards

NSERC Postgraduate Scholarship	1999-2001
Canadian Space Agency NSERC Scholarship Supplement	1999-2001
President's Scholarship	1999-2001
Advanced Systems Institute Graduate Scholarship	1999
APEGBC Gold Medal for Outstanding Achievement in Computer Engineering	1999
Sant S. Aulakh Memorial Scholarship	1998-1999
Cunliffe Engineering Scholarship (2 times)	1997-1999
President's Regional Entrance Scholarship (UVic)	1997
Faculty of Engineering Dean's Entrance Scholarship (UVic, 2 times)	1995-1997
Canada Scholarship in Science and Engineering	1993-1997
Provincial Scholarship	1993-1994
Governor General's Bronze Medal for highest academic achievement in high school	

Interests and Hobbies

- Piano-playing (classical music)
- Chess
- Tennis
- Error control coding, cryptography, and communications

Miscellaneous

The most up-to-date version of this resume is available at <http://mbandsmer.itgo.com/>.

References and transcripts available upon request. Transcripts may also be viewed at <http://mbandsmer.itgo.com/>.