

Michael Capewell

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<http://michaelcapewell.com/work>

PROFILE

Software developer and tester with over 4 years of experience delivering well-written, well-documented, and maintainable code. Problem solver with an eye for detail who enjoys working in teams and helping others.

SKILLS

- Programming:**
- C++, Java, Visual Basic 6.0/.NET, Python, 68000 Assembly
 - SQLite with SQ3, Qt and wxWidgets GUI frameworks, multi-threaded applications, real-time systems, UDP, TCP, SOAP
 - InterMAPhics 2D/3D GIS mapping
- Concepts:**
- Object-Oriented Analysis and Design, Design Patterns, UML, Networking
- Testing:**
- CppUnit, JUnit, Rational Test RealTime
- Web Applications:**
- HTML, CSS, ASP, VBScript, SQL, MS Access
- OSs:**
- Windows 95/98/2k/XP/7, Ubuntu Linux
- Tools:**
- SVN, ClearCase, ClearQuest, Doxygen
 - Visual Studio 6.0-2008, Eclipse
 - Word; Excel and VBA macros; MS Access forms and reports. Some AutoHotKey.
- Other:**
- Excellent written communication skills
 - Good debugging and troubleshooting intuition. Quick and continuous learner, multi-tasker. Inventive, resourceful, thorough, organized.
 - Intermediate French (four years of French Immersion)

PROFESSIONAL EXPERIENCE

General Dynamics Canada

Oct 2006 - Nov 2009

Intermediate Software Engineer, Air and Naval Research and Development

- Focused on developing prototypes and maximizing code reuse between projects. Tools used: C++, Java; MS Visual Studio, Eclipse; Qt, SQLite, SOAP, Service-Oriented Architectures (SOA), web services, CppUnit, InterMAPhics; SVN, ClearCase, ClearQuest.
- Worked on multi-platform C++ open architecture application framework used in several other *General Dynamics Canada* projects. Added new features; found and fixed bugs. Recognized for writing very helpful example applications. Wrote CppUnit tests. Provided support to users. Tested on Windows, Linux, and Solaris and created release packages. Updated documentation.
- Responsible for writing core architecture for WOMBATS Aircraft Weapons Management System. Also created 3D mission replay system. Tools used: C++, Qt, SQLite, InterMAPhics.
- Assisted in managing computer laboratory containing a number of Command and Control systems. Set up and operated numerous systems for demonstrations to government, forces, and business personnel. Prepared detailed documentation for reproducing the demonstrations.
- Wrote communication bridges in Java to allow transmission of intelligence data between different Command and Control systems, including DRDC's MUSIC/SODA SOA.

- Designed and wrote the component architecture for a set of intelligence-gathering applications for handheld computers, allowing quick development of new applications. Reused WOMBATS code where possible.
- Created reusable libraries with similar interfaces for using various devices such as a GPS receiver, laser rangefinder, portable weather sensor, and an AIS receiver.

Aviya Technologies, Inc.

Jul 2006 - Oct 2006

Software Tester

- Tested airplane systems software to safety-critical DO-178B Level A compliance using Rational Test Real Time.
- Peer-reviewed tests of co-workers on a regular basis.
- Assisted in writing script for remote testing resulting in increased use efficiency of a limited number of testing stations.

Computing and Communications Services (CCS), Carleton University

Spring 2004, Winter 2005

Webmaster

- Managed and improved website (www.carleton.ca/ccs). Added many new site features using ASP, VBScript, SQL, and MS Access; improved HTML and CCS standards-compliance and accessibility.
- Organized and ran Web Team meetings to display work, learn of issues, and generate new ideas and plans of action; quickly created easy-to-use VB6.0 applications to simplify site updating by other CCS employees. Corrected spelling, grammar, and writing style throughout the site.

Department of Systems and Computer Engineering, Carleton University Summer 2002, Summer 2003*Programmer/Analyst working for Prof. John W. Chinneck*

- Worked on MProbe, a program that aids in solving/analyzing systems of equations.
- Designed and programmed MProbe's main new feature in v4.0. Also identified and fixed numerous GUI bugs, and significantly improved GUI performance in data-heavy windows.
- Discovered a subtle, but significant, bug in MProbe's random sampling routine. Wrote and presented comprehensive report on the cause of the bug, its effects, and possible solutions. Developed new, more effective, sampling algorithms, evaluated them, and incorporated the best ones into MProbe.
- Wrote DLLs for reading and writing equation set files in MPS and GAMS format, including documentation and well-commented code for easy maintenance.
- Helped upgrade MProbe from Visual Basic 6.0 to .NET

EDUCATION

Bachelor of Engineering: Computer Systems Engineering, 2005

Carleton University, Ottawa, Ontario

Graduated with distinction, B+ CGPA. Dean's List, 2001

AWARDS AND HONOURS

Two "Recognition Now" awards at *General Dynamics Canada*

First in Eastern Ontario in 1999 ECOO high school team programming competition.

First in school board on Grade 10 Waterloo math contest. First in school in Grade 12 Waterloo math contest,

OAC University of Waterloo SIN physics contest, and OAC University of Toronto da Vinci engineering contest.

OTHER PROJECTS

See <http://michaelcapewell.com/programming> for more information about these and other projects.

Alternative Keyboard Layouts

2005-2006

- Created the "Capewell-Dvorak" keyboard layout by updating the Dvorak layout to improve comfort and to fit modern typing shortcuts. Layout is mentioned on EHow, AllExperts, and other websites.
- Wrote a program to computationally 'evolve' the most comfortable and efficient keyboard layout possible, to increase typing speed and reduce the risk of repetitive strain injury (RSI). (C++ on Linux and Windows)
- Wrote extensive qualitative and quantitative analysis of keyboard layout design on website. This work has been widely cited in others' attempts at creating efficient layouts and has been linked to by sites such as Wikipedia.
- Was consulted on the design of the Colemak layout, now the 3rd most popular English-language keyboard layout in the world (after QWERTY and Dvorak) and included in Ubuntu Linux.
- Developed effective typing lesson system based on most common letter combinations. (VB 6.0)

Online Video Game Hockey League: NHL '94

2008-2010

- Runs an online video game hockey league at <http://blitz94.com>. League has 30 current participants.
- Created website that automatically tracks standings and over 100 different statistics for the users, teams, and virtual players from over 2300 matches and 4 seasons played since 2008.
- Website database system is also used by another person's league at <http://nhl91.com>. (ASP/VBScript, SQL, MS Access, HTML, CSS)

Sega Genesis and Super Nintendo Game Editing

2008-2010

- Edited the machine language code of a Sega Genesis hockey game to fix bugs, change game behaviours, and track extra statistics. Edited the machine language code of a Super Nintendo hockey game to add more teams.
(Sega CPU: Motorola 68000; Super Nintendo CPU: Ricoh 5A22/65c816)
- Wrote a program called EARE to allow others to easily modify the Sega game's behaviours. (C++, Qt)

Sports Pool Team Chooser (v4.0)

1998-2007

- Wrote program to collect and analyze sports statistics to predict the best players to pick in online weekly sports pools. Finished 12th of over 40,000 in the 2005-06 Sportsnet.ca hockey pool.
(Windows and Linux C++, wxWidgets GUI framework; also a web version in ASP/VBScript, SQL, MS Access. Versions 1.0 to 3.5 written in Visual Basic 6.0)

Digital Yearbook

1999

- Part of a two-person team who organized, designed, programmed, and sold North Dundas District High School's first digital yearbook on CD-ROM in 2000. (Visual Basic 6.0)