

Michael Weingert

Mechatronics Engineer, Computer Scientist, Mathematician

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Technical Skills

Artificial Intelligence: Reinforcement Learning, Machine Learning, Game Theory, Probabilistic models.

(Learned at: [Ubisoft](#), [Chess AI](#), [Gesture Recognition project](#), [Stanford](#))

Mobile: iOS, Windows 8, Touch (gestures), embedded Web Applications

(Learned at: [Microsoft](#), [Gesture Recognition](#))

Graphics: 3D rendering, parallel processing, image filtering/transformations

(Learned at: [Sunnybrook Hospital](#), [Chess AI](#))

Strong software engineering background:

Languages: C/C++/C#, Java, iOS, Objective-C, CSS, HTML, Javascript, OpenGL/CL, GLSL

Tools: Linux, OS X, Windows, Git, Visual Studio, XCode, Perforce

Work Experience

Microsoft

Software Design Engineer

Redmond, WA

Sept 2012 - Dec 2012

- Created native applications for iOS and Windows 8 on Microsoft CRM team
- Constructed a communication and authentication framework between web-based code and native code.
- Assumed responsibility as sole developer, tester and creator of the applications.

*iOS, Objective-C,
Windows 8, WinJS,
LiveID, OAuth,
Javascript, CSS, HTML,
End-to-end
Development*

Ubisoft

Game Programmer

Toronto, ON

Jan 2012 - May 2012

- Extended the current Bayesian hierarchical state machine to respond to environmental factors.
- Collaborated across several teams to create an efficient and effective AI response with polished user experience.
- End-to-end owner of project from conception to completion.

*C++, AI, Cross-team
communication, End-
end development,
Developing for User
Experience*

Sunnybrook Hospital

Jr. Software Engineer

Toronto, ON

Sept 2010 - Sept 2011

- Created a new application in C# to acquire / display frames of data from a 3D ICE catheter in real time.
- Used OpenGL for image rendering and OpenCL/GLSL for image processing and manipulation.
- Created a low-level data pipeline to aid in real-time filtering

*C++, MFC, C#, C
OpenGL, OpenCL,
GLSL, FPGA, Real time
programming, Image
processing/filtering*

University of Waterloo

F1 Car Team

Machinist/Business Liaison

Waterloo, ON

Jan 2010 - May 2010

- Created and refined mechanical components including the bellcranks, pinion gear, and differential bearing blocks.
- Delineated and presented financial reports and business proposals for RIM, Spaenaur, and RapidGear.
- Served as a liaison between mechanical and business teams.

*Prepared business
presentations,
financial reports,
Cross team
communication*

Personal Projects

Touch Gesture

Recognition

Oct 2012 - Current

- Investigating different methods of mapping touch gestures to a list of 'known' gestures.
- Examining shape matching (image moments) as well as training (neural network) algorithms.

*C++, Objective-C,
OpenCV, iOS,
Image Processing,
Machine Learning*

Chess AI

Feb 2012 – May 2012

- Investigated reinforcement learning and genetic algorithms to train a linear regression function.
- Created a 3D application to interface with human players.
- The AI played over 4000 training games against itself and went 6-0 against volunteers at a design symposium.
- Increased search efficiency by alpha-beta pruning the minimax/decision tree and utilizing multithreading.

*OpenGL, C++,
Objective-C, OS X,
Genetic Algorithms,
Reinforcement
Learning*

Sudoku AI

Jan 2012 – Feb 2012

- Used constrained and backtracking search algorithms to solve an arbitrary Sudoku puzzle.

*C++, AI, Constrained
Searching*

Java Games

Jan 2010 – Sept 2011

- Created several games in Java including minesweeper, tic tac toe, checkers, asteroids

*Java, Java2D,
Collision Detection*

Education

University of Waterloo

Sept 2009 – May 2014 (expected)

- **Major:** Mechatronics Engineering
- **Minors:** Pure Math, Computer Science
- **GPA:** ~90/100
- Data structures and Algorithms, Real Time Operating Systems, Microprocessors and Interfacing

Stanford Univ. (online)

Aug 2012 – March 2013

- Intro to Machine Learning, Probabilistic Graphical Models, Compilers, Game Theory

Awards/Activities

University of Waterloo

Sept 2009 – May 2014 (expected)

- Dean's Honour List (2010-2012)
- President's Scholarship of Distinction (2009)
- 3rd Place Waterloo Engineering Competition Jr. Design Competition (2009)
- First Year Mentor and Orientation Week Leader (2010)

Extracurricular

- NSERC Research Grant, Colibri Technology (2010)
- I enjoy playing soccer, tennis, as well as watching movies

Motivation/Drives

Continuous Improvement

- This applies to life, education, and work. There is always something that can be improved, some flaw, some room for improvement. My goal is to always be bettering myself, and my work.
- There is always more to be done. It is just a matter of identifying, prioritizing, and achieving.

Ambition

- Better to aim for the best, than to be contented with mediocrity.
- Setting lofty goals forces us to work harder, subconsciously and consciously.

Results

- Ultimately, the most important part of any job is achieving results in a timely manner.
- I pride myself on my work ethic and my ability to learn quickly.
- A solution should aim not to just solve a task at hand, but to solve the unknown tasks of the future.
- A solution should be extensible, flexible, and adaptable.