

Richard Abrich

B.A.Sc., M.A.Sc. Computer Engineering

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EDUCATION

M.A.Sc. Electrical & Computer Engineering 2013
University of Toronto *Toronto ON*

Thesis: [Computational Techniques for Detecting Coronary Atherosclerosis](#)
Computer vision, medical image processing, machine learning
GPA: 3.96/4.0 (cumulative)

B.A.Sc. Electrical & Computer Engineering 2011
University of Toronto *Toronto ON*

Thesis: [Real-time Simulation of Ultrasound Fields with CUDA](#)
“1st Place Software Design”
General Purpose GPU programming, 3D graphics
GPA: 3.6/4.0 (final year)

SKILLS

Languages English (native), French (fluent)
Programming Python, JavaScript, C++, Java, C, C#, Cython, MATLAB, PHP, Scala, VBA, SQL, HTML, CSS, \LaTeX
Software
Machine Learning Scikit-learn, TensorFlow, NumPy, SciPy, Pandas, Caffe, CUDA, Kaldi, CMUSphinx
Web/Mobile React, React Native, BackboneJS, D3.js, jQuery, Three.js, WebExtensions, WebGL
Databases Elasticsearch, MongoDB, MS SQL Server, MySQL, Oracle, PostgreSQL
Cloud AWS, Google CloudML, RabbitMQ, ZeroMQ
Graphics/Media GStreamer, OpenGL, Unity3D

PROFESSIONAL EXPERIENCE

Machine Learning Consultant Oct 2017 - Present
(Freelance) *Toronto ON*

- Advised executive leadership on product, technology, and hiring (clients with \$2M+ revenue, 30+ employees)
- Designed and implemented user behaviour time series classifiers, achieving over 80% accuracy

Co-Founder Oct 2016 - Aug 2017
Deep Diagnostics *Toronto ON*

- Created a [web-based spoken dialogue system](#) to take a medical history and generate its text summary
- Conducted a study at the University of Toronto demonstrating a 23% reduction in patient visit time
- Raised venture financing via the [NextAI](#) startup incubator
- Hired and managed three employees

Machine Learning R&D Engineer Jan 2015 - Oct 2016
Kindred Systems *Toronto ON, San Francisco CA*

- Designed and implemented libraries and tools for creating distributed robotics systems
 - Audio/video encoding/decoding/multiplexing
 - Data munging/storage/retrieval/visualization/annotation
 - Distributed messaging/model training
 - Speech recognition
 - Visual object detection
 - Virtual reality UI/UX
- Designed and conducted experiments in time series classification and forecasting with deep recurrent neural networks
- Summarized and implemented academic research papers in deep learning and reinforcement learning

Core Software Engineer*RBC Capital Markets*

Jul 2013 - Dec 2014

Toronto ON, Sydney AUS

- Designed, implemented, tested, and documented applications and libraries for global use
 - Profit & Loss reconciliation • Extract, Transform, Load (ETL) • Web service auth • Object/Relational Mapping
- Co-managed two software development contractors (reviewed code, assigned tasks and guided development)

Software Developer (Contractor)*Toronto General Hospital*

2009 - 2013

Toronto ON

- Designed/implemented applications to automate billing, track performance metrics, and reformat legacy documents
- Eliminated user errors and “saved over 200 personnel hours per year” through automation

PROJECTS**Machine Learning (Deep Learning)**

2017

IsMyTextCreepy.com

- Created an original dataset by scraping, transforming, and cleaning submissions to /r/creepyPMs
- Trained and deployed a deep neural network to classify text as “creepy” or “normal”

Human Computer Interaction

2013

[TouchFree Labs](http://TouchFreeLabs.com)

- Designed and implemented an application for manipulating 3D medical images in a surgical setting

Computer Vision, Parallel Programming

2012

[Face Detection with Improved Local Binary Patterns in CUDA](#)

- Designed and implemented a novel parallelized face detection algorithm

Machine Learning

2011

[Comparing AdaBoost, ArcGv, ArcGvMax, & SmoothMargin Boosting with Perceptrons & Decision Stumps](#)

- Implemented and analyzed boosting algorithms using demographic and molecular biology datasets

AWARDS

1st Place Rotman Entrepreneurship and Venture Capital Association Hackathon (\$24,000)	2013
Y Combinator Startup School invitee	2013
Highest Fruit Prize for Best Innovation, Women’s College Hospital, Hacking Health Toronto	2013
Mitacs Accelerate research grant (\$15,000)	2012
1st Place Orbis Software Design Grant (\$4,000)	2011
Department of Electrical & Computer Engineering Outstanding Project Award	2011
University of Toronto Arbor Scholar (National Scholar Finalist) (\$15,000)	2006
Bank of Nova Scotia Scholarship for Mathematics (\$1,000)	2006

PUBLICATIONS

- Abrich, R., Paul, N., Wong, W. (2014) Computational Techniques for Detecting and Characterizing Coronary Atherosclerosis. *Society of Thoracic Radiology Annual Meeting*.

INTERESTS

Music	Piano Performance (Royal Conservatory of Music, Grade 10, with Honours) History and Harmony (Royal Conservatory of Music, Grade 3, First Class with Honours)
Sports	Weightlifting, cycling, running, swimming, canoeing, snowboarding, wilderness camping
Travel	Australia, Austria, Cambodia, Canada, Colombia, Costa Rica, Czech Republic, Dominican Republic, England, France, Honduras, Hong Kong, Italy, Germany, Laos, The Netherlands, Poland, Portugal, Spain, Thailand, USA, Vietnam