Eric Brochu

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I have an academic background in Machine Learning and Artificial Intelligence and extensive industry experience in a variety of capacities. I have won awards for my academic work, and I have helped ship several high-profile apps.

Education

2011 — **PhD, Computer Science. University of British Columbia. Vancouver, BC, Canada.**

Nando de Freitas, supervisor.
Thesis: *Interactive Bayesian Optimization*

Selected Awards: First Place, ACM SIGGRAPH 2007 Student Research Competition
Walter C Koerner Fellowship
University of British Columbia Graduate Fellowship
NSERC Doctoral Scholarship

2004 — **MSc, Computer Science. University of British Columbia.**

1998 — **BSc, Computer Science. University of Regina. Regina, SK, Canada.**

1997 — **BA, English w/minor in Film Studies. University of Regina.**

Employment

mar 2016 - present — **Senior Software Engineer - Machine Learning. Tableau Canada. Vancouver, BC, Canada.**

Working with team of engineers and scientists to add recommender and other Machine Learning features to Tableau's line of data visualization products. Helping to design and implement features in analytics suite and evolving system architecture.

sep 2011 - dec 2015 — **iOS App Developer, *etc*. Pocket Pixels Inc. Vancouver.**

Objective-C developer on popular iOS photo editing apps Color Splash and Juxtaposer. As member of a 2-4 person studio, I was also deeply involved in UI/UX design, marketing, project management, customer support, *etc*.

Releases I worked on have been featured by Apple in the iOS App Store numerous times and have made it into the top 10 Paid Apps list in US, UK, Canada and other territories on multiple occasions. Customer reviews are overwhelmingly positive.

In May 2015, changed role from employee to independent developer working on an upcoming new photography app with Pocket Pixels as partner and publisher.

2005 - 2009 — **Senior Researcher. Worio (later renamed Zite). Vancouver.**

Worked on Zite news recommender apps and web service. As the primary Machine Learning researcher for most of this period, algorithms I developed and implemented became a significant part of the Zite recommendation engine, which was acquired by Flipboard, Inc in 2014 and integrated into their own recommender.

2001 - 2006, 2009 - 2010 — **Research Assistant/Teaching Assistant. University of British Columbia. Vancouver.**

2001 — **Software Engineer. SOMA Networks Canada. Toronto, ON, Canada.**

1998 - 2001 — **Compiler Optimization Developer. IBM Canada. Toronto.**

Technical Skills

Objective C, iOS App dev

Since 2011, I have been working mostly with Objective-C with some C/C++ and using Apple's iOS frameworks and developer tools, such as Xcode. Third-party frameworks I've been using include ReactiveCocoa and PromiseKit (for functional programming) and OpenCV (for Computer Vision).

Python, ML research

From approximately 2006 to 2011 my professional and academic work was largely Machine Learning using Python. I extensively used many numerical and scientific computing packages, most significantly NumPy and SciPy, as well as Enthought/Canopy. I also wrote code in C and C++ when Python was not sufficiently performant.

other

At other points in my career I have used MATLAB, Octave, Java, Lua and other languages.

Research Interests

Bayesian optimization

The focus of my academic work has always been AI tools that augment human decision making. My PhD work was a system to assist humans in efficiently finding solutions to difficult problems by using Machine Learning (primarily Bayesian optimization) to formulate minimal sets of questions or queries expected to be maximally informative. I am currently co-authoring a book based in part on my research in the subject.

applied ML & AI

Applications of Machine Learning and Artificial Intelligence I've researched and/or developed (academically or industrially) include: aiding users in finding parameters for procedurally-generated animation and graphics, efficiently training computer vision and robotics systems, internet search and recommendation, and automatic hyperparameter tuning for Machine Learning algorithms.

Selected Publications

E Brochu, T Brochu and N de Freitas. 2010. *A Bayesian Interactive Optimization Approach to Procedural Animation Design.* ACM SIGGRAPH/Eurographics 2010 Symposium on Computer Animation.

R Martinez-Cantin, N de Freitas, **E Brochu**, J Castellanos and A Doucet. 2009. *A Bayesian Exploration-Exploitation Approach for Optimal Online Sensing and Planning with a Visually Guided Mobile Robot.* Autonomous Robots, 27 (2): 93-103.

E Brochu, A Ghosh and N de Freitas. 2007. *Preference Galleries for Material Design.* ACM SIGGRAPH Sketch. ***First Place award, ACM SIGGRAPH 2007 Student Research Competition.***

complete list at haikufactory.com/publications/

Professional Activities

US Patents 20070156615 & 20080262986 *entitled* Method for training a classifier. Co-inventor with A Davar and M Klaas.

Program committee, NIPS 2011 Workshop on Bayesian Optimization, Experimental Design and Bandits.

VAGUE: A Multimedia Navigation Tool. Multimedia installation, Vancouver Art Gallery. October 2006 to January 2007. Part of exhibition "Emily Carr: New Perspectives on a Canadian Icon". Created while I was a UBC Research Assistant, in cooperation with the Vancouver Art Gallery.

Submission reviewer: NIPS (2011, 2010, 2008, 2007), IJCAI (2009), GI (2008), ICML (2007), AAAI (2007), SIGGRAPH (2006, 2005, 2004), CVPR (2005, 2004).