

Eric Brochu

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I have an academic background in Machine Learning and Artificial Intelligence and extensive industry experience. I have won awards for my academic work, and I have helped ship several high-profile features and 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 Recommendations 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.
- 2011 - 2015 **iOS App Developer, etc. Pocket Pixels Inc. Vancouver.**
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.
- 2005 - 2009 **Senior Research Engineer. 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

*Python,
ML research*

Since approximately 2006 my professional and academic Machine Learning work has mostly involved Python, with some additional work in Java and C/C++. I extensively used many numerical and scientific computing packages, most significantly NumPy and SciPy.

*Objective C,
iOS App dev*

From 2011 to 2016, I worked extensively with Objective-C with some C/C++ and using Apple's iOS frameworks and developer tools, such as Xcode. Third-party frameworks include ReactiveCocoa and PromiseKit (for functional programming) and OpenCV (for Computer Vision).

other

At other points in my career I have used MATLAB, Octave, JavaScript, 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.

Submission reviewer: UAI (2017), NIPS (2015, 2011, 2010, 2008, 2007), IJCAI (2009), GI (2008), ICML (2007), AAAI (2007), SIGGRAPH (2006, 2005, 2004), CVPR (2005, 2004).