Justin J. Beland

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Education

- **University of Toronto** — Toronto, ON
  Ph.D., Institute for Aerospace Studies — September 2016 – Present
- **University of Toronto** — Toronto, ON
  M.Eng., Institute for Aerospace Studies — January 2014 – June 2016
- **Western University** — London, ON
  B.Sc., Physics — September 2009 – April 2013
- **Western University** — London, ON
  B.E.Sc., Structural Engineering — September 2007 – April 2013

Research

- **Bayesian Optimization Under Uncertainty** — *September 2016 – Present*
  The primary focus of my work is concerned with the development of efficient probabilistic approaches for intelligent systems to make sequential decisions under uncertainty. This work extends the architecture of Bayesian optimization to cases where the parameters governing the objective function are random.

- **Data-Driven Particle Swarm Optimization Using Surrogates** — *September 2015 – June 2016*
  In this project I developed a particle swarm optimization algorithm to be used in an internal code in the Computational Modeling and Design Optimization Under Uncertainty Group at the University of Toronto. This code would apply a naïve approach to optimize a Gaussian process regression model.

Work Experience

- **Researcher, Numeric Methods Group, Pratt & Whitney Canada** — *May 2017 – Present*
  With a team of computer scientists, physicists and engineers, I benchmark in-house machine learning strategies against some of the routines in common packages on large datasets. Further, I am testing novel Bayesian style optimization algorithms.

- **Teaching Assistant & Skule Tutor, University of Toronto** — *Jan 2014 – Present*
  I instruct students in engineering and computer science the language fundamentals of `Python`. My teaching experience includes structural engineering, calculus and physics, computer programming.

- **Consultant, Focal Healthcare** — *July 2016 – Jan 2017*
  Working with a team of medical professionals, scientists and engineers I implemented an automated system to verify compliance of patient information using DICOM standards in `C#`. The objective is to automate the transmission of mixed data structures to a medical imaging device used for prostate cancer detection.

- **Contractor, Compressor Engineering, Pratt & Whitney Canada** — *Aug 2015 – Jan 2016*
  Within a team of engineers I utilized data-mining techniques to extract unstructured data. Using this data, we trained Gaussian process models on distributed systems.

Skills

Languages: C++, C#, Python, MATLAB, HTML — English, French

Operating Systems: Linux, Mac OS X, UNIX, Windows

Publications & Presentations

- Bayesian Optimization Under Uncertainty – Proceedings of the NIPS workshop on Bayesian optimization for science and engineering – co-author: Dr. P. B. Nair – 2017
- NIPS 2017 BayesOpt workshop spotlight presentation: Bayesian Optimization Under Uncertainty

Open Source Projects

2015–Present Gitlab, GitHub