
Relevant Experience

- 4/2013 – **Software Development Engineer II**, *Amazon.com, Inc.*, Seattle, WA.
current
- Taught functional data programming for scala and javascript to two teams
 - Became internally recognized expert in the Spark mapreduce framework
 - Critical part of project to rebuild Contribution Profit system in Spark
 - Conceived of Retail Video Recorder for recording fast help videos for business users and then lead prototype team
- 2009 – **Developer/Quantitative Analyst**, *RPX Research, Inc.*, Redmond, WA.
- 10/2012
- Engineered on-line, high-frequency (10ms), price model for a bond trading algorithm with continuous updating, extendible model and data-feed specific tuning (C#)
 - Engineered price, trade and volatility time-series models for large datasets in search of bond, futures and equity market trading strategies using SQL, NumPy and PyMC (C#, Python)
 - Engineered system for creating and visualizing trading performance metrics using SQL and MSChart and with higher-order function based extensions
 - Built system for evaluating bond, futures and equity trading strategies against historical market data by simulating real time trading
 - Added high-frequency price data to data collection infrastructure
- 2012 **Statistical Consulting.**
Corporate bond default model
- Bayesian proportional-hazards model with a latent, time-varying, financial-fragility factor
 - Multi-level effects
 - Fit numerically using two-layer Hamiltonian Monte-Carlo
- Summer 2006 **Developer (Intern)**, *Capstone Technology*, Camas, WA.
- Improved stability and interface efficiency of PARCSuite plant operations management software (C#)
 - Responsible for the migration of several components of the PARCSuite software from the 1.1 .NET framework to the 2.0 .NET framework

Open Source

- 2012 – **PyMC 3.0**, *Bayesian inference package (Python)*.
Engineered PyMC 2.2 Theano based replacement with dramatically simpler, smaller and more powerful code-base, which will soon replace PyMC 2.2 and become PyMC 3.0
- 2010 – 2012 **PyMC 2.0**, *Bayesian inference package (Python, C, Fortran)*.
- Added Automatic Differentiation for likelihoods
 - Implemented gradient based samplers which scale better with problem size, self-tune, handle difficult distributions well, etc.
 - Engineered PyMC extension allowing for multiple chain samplers
 - Experimented with numexpr and Cython code generation using Jinja2 templating for likelihoods
- 2012 **NumPy**, (C).
Patch adding advanced indexing interface to NumPy's C-API
- 2012 **Theano**, (Python, C).
Patch adding fast advanced indexing and gradient support
- 2009 **scikits.bvp_solver**, (Python, Fortran).
Built and presently maintain a user-friendly interface for the Fortran numerical boundary value problem solver BVP_SOLVER

Self-Study

10 – 12/2012 **Carnegie Mellon Courses.**

Completed all lectures and homework for two courses. Courses were designed for Standard ML, but I completed them in Scala.

- 15-150: [Functional Programming](#)
- 15-210: [Parallel & Sequential Data Structures and Algorithms](#)

12/2012– **Hadoop and Scalding.**

Learning Hadoop via Twitter's Scalding, by implementing efficient parallel prefix-sum function and other projects

Technical

- Fluent with C#, Python, Scala
- Experienced with Java, Haskell, Standard ML, C, C++, Fortran, R, \LaTeX
- Fluent with Bayesian statistical modeling and sophisticated Monte-Carlo sampling
- Well-versed in economics and decision theory
- Skilled at technical writing
- Fluent in Spanish

Education

2009 **University of Washington**, *B.S. in Chemical Engineering.*

2009 **University of Washington**, *B.S. in Paper Science and Engineering.*

Other Experience

Summer **Process Engineer (Intern)**, *Boise-Cascade*, Pasco, WA.

- 2008
- Investigated economics and feasibility of three capital projects
 - Conducted trial to investigate systemic product quality measurement problems

Summer **Process Engineer (Intern)**, *Boise-Cascade*, Pasco, WA.

- 2007
- Investigated maintenance and energy projects for cost effectiveness

Summer **Researcher (Intern)**, *Kimberly-Clark*, Neenah, WI.

2005