John Salvatier

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Relevant Experience

2009 – 10/2012 **Developer/Quantitative Analyst**, *RPX Research, Inc.*, Redmond, WA.

- 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 2008 **Process Engineer (Intern)**, *Boise-Cascade*, Pasco, WA.

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

Summer 2007 **Process Engineer (Intern)**, *Boise-Cascade*, Pasco, WA.

- Investigated maintenance and energy projects for cost effectiveness

Summer 2005 **Researcher (Intern)**, *Kimberly-Clark*, Neenah, WI.