Chris Stucchio

Profile

I analyze data, quantify what is known and deliver insights into that which is unknown. I build robust, efficient software systems that degrade gracefully when things don't go as planned. For details see my github (https://github.com/stucchio) or blog (http://www.chrisstucchio.com/blog/index.html).

Experience

2015-Present **Wingify/VWO**, *Director of Data Science*, USA, India.

Lead statistical efforts at Wingify, both externally focused projects (e.g. the core A/B testing engine) and internal ones (predictive analytics for sales and marketing). Communicated and evangelized the importance of statistics to customers and prospects.

- Designed and architected SmartStats, a Bayesian A/B testing engine designed for humans. Buzzwords: distributed computing, quasi-Monte Carlo, Bayesian Inference.
- Built a behavioral targeting system for push notifications and site modifications. Buzzwords: functional programming and category theory, probabilistic algorithms, Akka, Scala.

2014-2015 **Wingify/VWO**, *Consultant*, USA, India.

2013-2015 **Independent Consultant**, USA, UK, India.

Consultant for a variety of clients in the legal, financial and e-commerce spaces. More significant projects include:

- Forensic accounting, analyzing equity and options trades in search of criminal activity. Modeling price impact and regulatory compliance.
- Analysis and implementation of microfoundation-based macroeconomic models in order to perform macroeconomic modelling beyond the regime of historical data.
- Design and analysis of Bayesian algorithms for improving product discovery on certain fashion sites.

2012-2013 **Patch**, *Senior Software Engineer*, NY, NY.

I taught Patch how to use data to make decisions. I built an A/B testing framework and pushed testing and data to the forefront of Patch engineering culture - all major decisions are now driven by A/B tests. I was also the primary architect on Chilaquiles, the realtime monitoring and recommendation system that powers Patch's content selection. Primary technologies used were Scala, Akka and Hadoop.

- Designed realtime Bayesian recommendation system, generating an 120% increase in Click Through Rate and increasing page views by 2%.
- Built behavioral spam filtering system which blocked spammers based on site behavior.
- Built funnel tracking system, discovering numerous bottlenecks in the creation of User Generated Content.
- Assorted backend infrastructure work - SQL query optimization and schema design, performance optimization, etc. Made the site hundreds of milliseconds faster and the codebase cleaner.

2011-2012 **Styloot**, *CTO*, NY, NY and Pune, India.

Designed and built Styloot, a visual search engine for women's fashion. Users can create the visual representation with Styloot's create page or they can upload photographs with Styloot's iPhone app, and Styloot will find items of similar appearance in our catalog. Managed a technology team of 3 people and an oracle staff of 8.

- Designed a NoSQL in-memory data indexer (called Hobo) to handle search.
- Performed experiments on women's perception to determine what features are important in fashion search.
- Technologies used: Python/Django, C++, Java and Hadoop (all hosted on AWS). We also use a team of human oracles as an in-house version of Mechanical Turk.

2010-2011 **Mesh Capital**, *Quantitative Trader*, Jersey City, NJ.

Devised and implemented strategies for high frequency trading. Designed a global predictive strategy using activity in high volume stocks to predict price movements of low volume stocks. Micro-optimized various system components to reduce latency during high volume periods. Devised dynamic portfolio rebalancing strategy to reduce risk and increase profits. All work done in Java.

2009-2010 **Trading Games**, *Quantitative Developer (Consultant)*, NY, NY.

Designed and implemented alpha version of a prediction market platform for an early stage startup. Platform consists of a backend which acts as an exchange for binary event futures, a frontend which is a web-based user interface allowing users to buy and sell event futures, and a JSON API which allows external developers to interface with the system.

- Technologies used: Python/Django, C++, AMQP (RabbitMQ)

2007-2010 **Courant Institute, NYU**, *Postdoctoral Scholar*, NY, NY.

Developed a model-based reconstruction algorithm for MRI (Magnetic Resonance Imaging) as well as a supporting library of computational geometry algorithms. This involves both image processing and computational geometry. Developed new numerical algorithms for solving wave equations (particularly electromagnetism and superfluids) and built a model of quantum decoherence to help understand the measurement problem.

2002-2007 **Rutgers University**, *Bevier Graduate Fellow*, Piscataway, NJ.

Developed a software package for solving the partial differential equations involved in modeling nanoscale quantum transport (written in Python and C). Managed a team of two undergraduate researchers for part of the project. In collaboration with experimentalists at the Technion/Israel Institute of Technology, I used the aforementioned software package to model optics experiments. I also taught courses ranging from Precalculus to Differential Equations.

Skills

Analytical Skills, Experience in high frequency trading, image processing, theoretical physics and machine learning.

Languages, Python, Scala, Java, C++, Haskell, Javascript, Emacs Lisp.

Education

2007–2010 **New York University**, *Postdoctoral Scholar, Mathematics*, NY, NY.

2002-2008 **Rutgers University**, *Ph.D., Mathematics*, Piscataway, NJ.

2000-2002 **Stevens Institute of Technology**, *B.S. Mathematics and Physics*, Hoboken, NJ.

Publications

A. Barak, O. Peleg, C. Stucchio, A. Soffer, and M. Segev. Observation of soliton tunneling phenomena and soliton ejection. *Physical Review Letters*, 100(15):153901, 2008.

O. Costin, J. L. Lebowitz, and C. Stucchio. Ionization in a 1-dimensional dipole model.

Reviews in Mathematical Physics, 20(7):835–872, 2008.

O. Costin, J. L. Lebowitz, C. Stucchio, and S. Tanveer. Exact results for ionization of model atomic systems. submitted.

G. Dekel, V. Fleurov, A. Soffer, and C. Stucchio. Temporal dynamics of tunneling: Hydrodynamic approach. *Phys. Rev. A.*, 75(4):1050, 2007.

J. Frohlich, A. Soffer, and C. Stucchio. Wave collapse doesn't matter. *In Preparation*, 2007.

L. Greengard and C. Stucchio. Reconstructing curves from points and tangents. 2009.

L. Greengard and C. Stucchio. Spectral edge detection in two dimensions using wavefronts. *Applied and Computational Harmonic Analysis*, In Press, Corrected Proof:–, 2010.

C. Siegel, A. Soffer, and C. Stucchio. Improved error bounds for a higdon open boundary condition. *preprint*.

A. Soffer and C. Stucchio. Time dependent phase space filters: Nonreflecting boundaries for semilinear schrodinger equations. 2006. in preparation.

A. Soffer and C. Stucchio. Open boundaries for the nonlinear schrodinger equation. *Journal of Computational Physics*, 225(2):1218–1232, 2007.

A. Soffer and C. Stucchio. A stable absorbing boundary layer for anisotropic waves. *(Submitted)*, 2008.

A. Soffer and C. Stucchio. Multiscale resolution of shortwave-longwave interactions in time dependent dispersive waves. *Communications in Pure and Applied Mathematics*, 62(1):82–124, 2009.

Author of `www.chrisstucchio.com`, a widely read blog..
Referenced by the Huffington Post, National Review, Reuters, Business Insider, and MarginalRevolution.com (among others).

Talks (Selected)

2015 **Conversion Hotel**, *Bayesian A/B Testing*, Texel, Netherlands.

2015 **Crunch Conf**, *Multiple Comparisons: Make Your Boss Happy with False Positives*, Budapest, Hungary.

2014 **Pune Scala Symposium**, *Number Crunching in Scala*, Pune, India.

2012 **VIT Computer Science Seminar**, Pune, India.

2009 **Rutgers University Mathematical Physics Seminar**, Piscataway, NJ.

2008 **Wolfgang Pauli Institute**, Vienna, Austria.

2008 **SIAM Annual Meeting**, San Diego, CA.

2008 **Frontiers in Applied and Computational Mathematics**, Newark, NJ.

2007 **University of Chicago Applied Mathematics Seminar**, Chicago, IL.

2007 **SIAM Conference on Dynamical Systems**, Snowbird, UT.

2007 **Princeton Mathematical Physics Seminar**, Princeton, NJ.