

Brent Cohn

CONTACT INFORMATION

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PROFESSIONAL EXPERIENCE

The Laboratory for Systems Medicine
Harvard University & Brigham and Women's Hospital
Cambridge, Massachusetts

Data Scientist

2014 - Present

Conduct research under the supervision of Harvard professors Ziad Obermeyer (medicine) and Sendhil Mullainathan (economics). Responsible for programming and analysis in the following projects:

- *Prediction Policy Problems*
Conducted analysis to illustrate the large potential social welfare gains from improved prediction using machine learning algorithms. Implemented and evaluated a variety of models including penalized general linear models, decision trees, random forests, and AdaBoost using the R programming language. Published in the *American Economic Review: Papers and Proceedings*.
- *Low-value care: Moral hazard or misprediction? Using machine learning to understand doctors' decisions.*
Used machine learning algorithms to analyze the records of more than four million Medicare beneficiaries in order to predict adverse events and medical test results. Implemented custom loss and splitting criteria for gradient boosted trees. Paper under review.
- *Predicting mortality after emergency hospitalizations in Medicare beneficiaries with cancer.*
Employed a variety of supervised and unsupervised learning techniques to accurately predict survival in Medicare beneficiaries with poor prognosis cancer. Applied unsupervised learning techniques (TSNE and k-means) to find cancer cancer 'clusters' that improve model performance. Paper under review.

Tufts University
Medford, Massachusetts

Lecturer

2014

Designed and taught *Health Policy and the Open Data Revolution*, a full credit class offered in the fall of 2014. Syllabus: <http://bco.hn/syllabus.html>

- This class focuses on the application of data science techniques to open healthcare data. Students learned R, and created a healthcare related term project.

GNS Healthcare
Cambridge, Massachusetts

Associate Scientist

2013-2014

Conducted analyses of drug efficacy using proprietary Bayesian network models.

RTI International
Waltham, Massachusetts

Public Health Research Analyst III

2013

Created visualizations and statistical models for several major Centers for Medicare and Medicaid Services evaluations including Patient Centered Medical Homes and Accountable Care Organizations.

EDUCATION

The University of Calgary

Calgary, Alberta Canada

MA, Economics, 2012

Stephen G. Petchinis Memorial Graduate Recruitment Scholarship

Teaching assistant for intermediate macroeconomics

The University of South Carolina,

Columbia, SC USA

BSc, Economics 2010

BA, International Studies 2010

Graduated *cum laude*; Capstone Scholar, 2006-2010; Life Scholar, 2006-2010

COMPUTER SKILLS AND RELATED PROJECTS

Languages

- *Python*

Implemented Bayesian linear regression, Softmax regression with stochastic gradient descent, and Naive Bayes. Placed 16th (out of 97 teams) in a Kaggle competition using a script written in Python.

- *Javascript*

Implemented K nearest neighbors, Softmax regression, and simple linear regression in Javascript and visualized results using D3. Created an adjustable map of US population density using D3. Other D3 work available: <http://bl.ocks.org/bcohn>

- *R*

All major programming work for the Systems Medicine Lab was conducted in R. Implemented numerous statistical learning algorithms. Expert user of a large number of packages including ggplot2, data.table, glmnet, xgboost, and dplyr. Answered 60 R related questions on Stackoverflow, reaching approximately 11,000 people. (<http://stackoverflow.com/users/2498263/bjoseph>)

- *SQL (PostgreSQL & SQLite)*

Helped design and construct an approximately two terabyte database of healthcare claims at GNS Healthcare. Designed scripts that queried the database to construct analytical datasets.

- *Bash*

Statistical Packages: Stan, BUGS, Stata.

Applications: L^AT_EX, Excel, Word, Adobe Illustrator.

VOLUNTEER POSITIONS

Boston Python Workshop, Boston, Massachusetts, USA

Instructor

2013

Taught Python at weekend workshops that empower women of all backgrounds to learn practical programming in a beginner-friendly environment. <http://bostonpythonworkshop.com/>

Bill & Melinda Gates Foundation, Boston, Massachusetts, USA

Evaluation Facilitator

2013

Administered Spanish language surveys, recorded and lead Spanish language focus groups while managing a small team of English language proficiency testers for a pre-/post-evaluation of Xenos-ISLE, a games-based approach for learning English. Facilitated through RTI International.

LANGUAGES

English, Spanish (fluent).