BENJAMIN S. SKRAINKA

PERSONAL INFORMATION

Based in Seattle; willing to relocate to any city with excellent cycling and opera.

PROFESSIONAL SUMMARY

Applied economist specializing in econometrics, machine learning, analytics, industrial organization, and computational economics with outstanding computational skills and practical judgement. Research and professional work has focused on predictive analytics, times series forecasting, merger analysis, computational methods, demand estimation, differentiated products, advertising analysis, and experimental design. excellent public speaking and client management skills. Adroit at both structural and reduced form methods.

WORK EXPERIENCE

2015–present **Principal Data Scientist**

GALVANIZE
2015–present

Built and lead Galvanize's top data science program (NPS & survey results 10-30% better than other campuses) · Hired, managed, and developed team of six data scientists · Principal on various consulting engagements · Championed standardization and professionalization of all aspects of instruction, while obtaining buy-in of key stakeholders · Recruited students and partners via conference presentations, panels, networking, mentoring, and meetups.

2014–2015 **Data Scientist**

CONTEXT RELEVANT
2014–2015

Researched, designed, and implemented improvements to model evaluation and interpretation for an automated, distributed analytics platform · Developed, wrote, and delivered internal and external training workshops · Consulted on various data science projects in Finance.

2013–2014 **Research Scientist, AMAZON WEB SERVICES (AWS)**

AMAZON.COM
2012–2014

Benchmarked and researched improvements to forecasting system used by Amazon Web Services for capacity planning, saving $50-100MM per year · Designed new long-term forecasting system to improve forecasts, speed of innovation, and ease of diagnosing problems · Built automated metrics deck of forecast performance to identify problems quickly.

2012–2013 **Sr. Analytics Manager, TEXTBOOKS MARKETING**

Founded embedded Textbooks Analytics group to measure return on advertising investment · Designed and implemented predictive models to target customers and prevent churn using machine learning · Researched and applied novel panel data and matching methods to correct for selection bias and disseminated method to other practitioners · Designed A/B tests and multi-factor experiments to measure numerous $100M to $1+MM marketing campaigns for a variety of channels (Internet radio, terrestrial radio, direct mail, guerrilla marketing).

2005–2012 **PhD Student & Post Doctoral Fellow**

See EDUCATION below for details

2004–2005 **Software Engineer, JOINT GENOME INSTITUTE**

LBNL
2004–2005

Redesigned and implemented Jazz whole-genome shotgun assembler in C++ · Improved maintainability and verification

1997–2004 **Software Consultant, SELF-EMPLOYED**

Consultant
1997–2004

Developed and delivered security software, bioinformatic databases, and custom software engineering training

1995–1997 Software Engineer, Wind River Systems

Wind River
1993–1997

Designed and built 'Backend Developer's Kit' – including a CPU32 reference implementation – for integrating emulators with Wind River's development environment, remedying a costly strategic weakness · Managed junior engineer and development of VxWorks's C++ support · Provided pre- and post-sales field support throughout UK and Benelux

1993-1995 (Senior) Software Engineering Instructor, Wind River Systems

Developed and delivered week-long, embedded software engineering workshops · Taught workshop in adversarial environment which was instrumental to luring largest ($1MM) sale in the Southeast region from main competitor

1991–1993 Staff Scientist, Systems Applications International

SAI
1991–1993

Developed statistical software and analyzed air quality datasets

EDUCATION

2011-2012 Post Doctoral Fellow, University of Chicago

Post Doctoral Fellow

At Harris School of Public Policy, researched, developed, and transferred computational methods from Physics to Economics · Designed and delivered course on software engineering for social scientists · Advised social science faculty on computational methods & practice
Advisor: Robert Rosner

2006-2011 PhD Economics, University College London

PhD Economics

Designed and executed 100,000+ node-hour Monte Carlo simulation to demonstrate bias in leading model for estimating demand for differentiated products · Developed a geographic model of demand and strategic interaction to evaluate the Morrisons-Safeway merger · Demonstrated superiority of polynomial-based quadrature methods to simulation for approximating high-dimensional integrals for a class of GMM problems
Fields: *Industrial Organization, Applied Econometrics, Computational Economics*
Thesis: *Three Essays on Product Differentiation: Computational Tools for Applied Research, Evaluating Model Behavior, and Geographic Demand*
Advisors: Lars P. Nesheim & Andrew Chesher

2005-2006 MSc Economics, University College London

MSc Economics

1st in class · Additional course work in Industrial Organization, Econometrics, and Finance · Solved a non-convex, dynamic programming problem for thesis
Thesis: *Large Infrastructure Externalities and Regional Growth*
Advisor: Lars P. Nesheim

1985-1989 AB Physics, Princeton University

AB Physics

magna cum laude
Thesis: *The Wave Function of the Universe*
Advisor: Neil Turok

COMPUTER SKILLS

Languages (sharp) C, C++, FORTRAN, Python, MATLAB, SQL

Languages (rusty) Perl, Java

Statistics	R, Pandas, Numpy, SciPy, scikit-learn, Stata, SAS
Distributed	AWS, Spark, MapReduce, MPI, Condor, Sun Grid Engine, PBS, Swift, sockets
Operating Systems	Unix/Linux, OS/X, VxWorks
Build	git, SVN, CVS, make
Other	System programming, C++ Standard Library, Eigen, Boost, LaTeX

PUBLICATIONS

May 2012 **A Large Scale Study of the Small Sample Performance of Random Coefficient Models of Demand**

SSRN Working Paper

Abstract: Despite the importance of Berry et al. (1995)'s model of demand for differentiated products (BLP hereafter), there are few results about its finite sample behavior. In theory, simulation experiments provide a tool to answer such questions but computational and numerical difficulties have prevented researchers from performing any realistic studies. Those Monte Carlo studies which exist focus on only one market and often take computational short-cuts. For example, Armstrong (2011) uses only 10 pseudo-Monte Carlo quadrature nodes and fixes the scale of the random coefficients. Nevertheless, by utilizing recent advances in optimization (Su and Judd, 2010; Dub et al., 2011) and multi-dimensional numerical integration (Skrainka and Judd, 2011), I develop a fast, robust implementation of BLP and show that a large-scale simulation approach is now feasible.This study estimated BLP over 320,000 times and used 94,325 CPU-hours (See [sub:Computational.Cost] for further discussion.). I compute the finite sample behavior under both the traditional BLP instruments (characteristics of rival goods) and exogenous cost shifters using synthetic data generated from a structural model for realistic numbers of markets and products. This paper, then, has two objectives: to demonstrate the power of modern computational technology for solving previously intractable problems in Economics via massive parallelization and to characterize the finite sample behavior of the BLP estimator.
Author: Benjamin S. Skrainka

June 2011 **High Performance Quadrature Rules: How Numerical Integration Affects a Popular Model of Product Differentiation**

Cemmap Working Paper

Abstract: Efficient, accurate, multi-dimensional, numerical integration has become an important tool for approximating the integrals which arise in modern economic models built on unobserved heterogeneity, incomplete information, and uncertainty. This paper demonstrates that polynomial-based rules out-perform number-theoretic quadrature (Monte Carlo) rules both in terms of efficiency and accuracy. To show the impact a quadrature method can have on results, we examine the performance of these rules in the context of Berry, Levinsohn, and Pakes (1995)s model of product differentiation, where Monte Carlo methods introduce considerable numerical error and instability into the computations. These problems include inaccurate point estimates, excessively tight standard errors, instability of the inner loop contraction mapping for inverting market shares, and poor convergence of several state of the art solvers when computing point estimates. Both monomial rules and sparse grid methods lack these problems and provide a more accurate, cheaper method for quadrature. Finally, we demonstrate how researchers can easily utilize high quality, high dimensional quadrature rules in their own work.
Authors: Benjamin S. Skrainka, Kenneth L. Judd

May 2012 **The Geography of Grocery Demand in the UK: An Evaluation of the 2003 Morrisons-Safeway Merger**

SSRN Working Paper

Abstract: In 2003, the UK Competition Commission (CC) approved the acquisition of Safeway plc by Wm. Morrisons plc, respectively the fourth and sixth largest firms in the industry. Because Morrisons focused on the North and Safeway on the South, this merger had the potential to create a fourth national

champion to rival Asda, Sainsburys, and Tesco, hopefully improving competition, lowering prices, and improving quality for consumers. But, the merger could also have had an adverse affect on competition by creating pockets of local market power which the merged firm could exploit. To evaluate the CCs decision, I construct a geographic distribution of demand which models the local interactions between consumer demographics and store locations. My model has several parts. I estimate a Discrete/Continuous structural model of demand from a high quality panel of consumer micro-data (the TNS Worldpanel) to explain both store choice and conditional demand for groceries. After combining this demand system with disaggregate census data, I recover marginal costs and then predict store-level sales and profits as well as willingness-to-pay. I use these tools to evaluate the welfare implications of the merger and of a counter-factual merger between Safeway and Tesco. I find that the changes in prices, profits, and consumer welfare under either merger are quite small although larger for a Tesco-Safeway merger. Although consumers are slightly worse off under these mergers, the results support the UK Competition Commissions approval of the merger.
Author: Benjamin S. Skrainka

OTHER INFORMATION

Awards

2006–2010 Cemmap Scholarship · Institute for Fiscal Studies

2009 Teaching Commendation (1^{st} place) · University College London

2005–2006 Gaitskell MSc Scholarship · University College London

1989–1990 Richard P. Feynman Fellowship · California Institute of Technology

1989 Kusaka Memorial Prize · top score on senior comprehensive exam · Princeton University

Public Service

2013–2014 · Amazon's team captain in Obliteride, a charity ride to benefit cancer research

2012 · Co-founded *The Hacker Within* to train graduate students in software engineering skills needed for research computing

2000–2002 · Founder and Director of *The Midway Shelter Bike Criterium Benefit*, a nationally-sanctioned bicycle race to benefit a local homeless shelter and promote grass-roots racing

Memberships

American Economic Association, Econometric Society, ACM, IEEE

Languages

English · Native

French · Intermediate

Russian · Intermediate