

## Luke Bornn

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### Research Interests

My research focuses on computational statistics and machine learning applied to large-scale spatial and dynamic data. Applications include structural health monitoring, climate informatics, and sports analytics. I'm also interested in the corresponding computational issues, mainly in the form of stochastic computation (Markov chain Monte Carlo, sequential Monte Carlo, and deterministic variants).

### Education

**Ph.D. Statistics**    University of British Columbia  
Vancouver, British Columbia    09/2008–07/2012

*Supervisors: Dr. Arnaud Doucet and Dr. Jim Zidek*

*Thesis Title: "Modeling Latent Correlation Structures with Application to Agricultural and Environmental Science"*

**M.Sc. Statistics**    University of British Columbia  
Vancouver, British Columbia    09/2006–08/2008

*Supervisors: Dr. Arnaud Doucet and Dr. Raphael Gottardo*

*Thesis Title: "Statistical Solutions For and From Signal Processing"*

**B.Sc. Mathematics and Statistics**    University of the Fraser Valley  
Abbotsford, British Columbia    09/2003–04/2006

### Research Experience & Employment

**Vice President, Strategy and Analytics**    Sacramento Kings  
05/2017–Present

**Assistant Professor (Tenure-Track)**    Simon Fraser University  
Department of Statistics and Actuarial Science    01/2015–Present

**Visiting Scholar**    Harvard University  
Department of Statistics    09/2015–08/2017

**Assistant Professor (Tenure-Track)**    Harvard University  
Department of Statistics    07/2012–08/2015

**Business Analyst**    Electronic Arts  
Football Business Analytics Team    09/2011–05/2012

**Visiting Professor/Researcher**  
Université Paris Dauphine and ENSAE    05/2014–06/2014  
Newton Institute, Cambridge University    05/2014  
Oxford University    12/2013  
University of Bordeaux and INRIA    03/2010–06/2010, 04/2011  
Los Alamos National Labs    02/2008–08/2008, 02/2010  
Stat. and Applied Math. Sciences Inst. (SAMSI)    09/2008–12/2008

**Research Assistant**

Dr. Jim Zidek and Dr. Arnaud Doucet  
 Dr. Arnaud Doucet and Dr. Raphael Gottardo

University of British Columbia  
 01/2009–12/2009  
 05/2007–02/2008

**Consultant**

Numerous tech startups, sports teams, etc.

06/2006–05/2017

**Teaching Experience****Instructor**

Stat 180: Career Development Seminar  
 Stat 350: Linear Models in Applied Statistics  
 Stat 440: Learning from Big Data  
 Stat 857: Space Time Models

Simon Fraser University  
 Fall 2016  
 Fall 2015  
 Fall 2016  
 Spring 2016

**Instructor**

Stat 183: Learning from Big Data  
 Stat 225: Spatial Statistics  
 Stat 303: The Art and Practice of Teaching Statistics  
 Stat 306: Research Topics in Sports Analytics  
 Stat 314: Timely Topics in Statistics  
 Stat 325: Advanced Topics in Environmental Modeling  
 Stat 328: Bayesian Nonparametrics

Harvard University  
 Spring 2014  
 Spring 2013, Spring 2014  
 Full-year 2012/2013  
 Fall 2014  
 Full-year 2013/2014, Fall 2014  
 Spring 2013, Full-year 2013/2014  
 Fall 2013

**Instructor**

BABS 550: Application of Statistics in Management

UBC Sauder School of Business  
 Fall 2010, Fall 2011

**Head Teaching Assistant**

Stat 241/251: Introduction to Statistics

University of British Columbia  
 Fall 2007

**Teaching Assistant**

Stat 443: Introduction to Time Series Analysis  
 Stat 241/251: Introduction to Statistics

University of British Columbia  
 Winter 2009  
 Fall 2006, Winter 2007, Summer 2007

**Mathematics Tutor**

All Levels

University of the Fraser Valley  
 2003–2006

## Service and Additional Training

- Chair-Elect – ASA Section on Statistics in Sports, 01/2018 - Present
- Co-organizer of BIRS-CMO workshop entitled *Computational Statistics and Molecular Simulation: A Practical Cross-Fertilization*, 11/2018
- Organizer of the Cascadia Symposium on Statistics in Sports (CASSIS), 08/2018
- Co-organizer of Visualization in Data Science (VDS), 10/2017
- Scientific Program Committee Member, 2017 Bayesian Nonparametrics Meeting, 04/2016 - Present
- Co-organizer of Banff International Research Station (BIRS) workshop entitled *Validating and Expanding Approximate Bayesian Computation Methods*, 02/2017
- Organizer of the Cascadia Symposium on Statistics in Sports (CASSIS), 09/2016
- Co-organizer of Visualization in Data Science (VDS), 10/2016
- SFU Committee Service
  - SFU Big Data Academic Advisory Committee, 02/2016 - 06/2017
  - Statistics Big Data Committee, 01/2015 - 06/2017
  - Statistics UG Curriculum Revision Committee, 09/2015 - 06/2017
  - Computer Science Tenure and Promotion Committee, 05/2015 - 06/2017
  - Statistics Tenure and Promotion Committee, 01/2015 - 08/2016
  - Statistics Joint Program Committee, 01/2015 - 01/2016
- Founder and Faculty Advisor, Simon Fraser Sports Analytics Club, 09/2015 - Present
- Member, SFU Sports Analytics Group, 01/2015 - Present
- Associate Editor, *Journal of Quantitative Analysis in Sports*, 05/2014 - Present
- Associate Editor, *Statistics and Computing*, 03/2014 - Present
- Scientific Committee Member, 2016 IMS-ISBA Joint Meeting, 02/2015 - 01/2016
- Member, Prozone Performance Lab Advisory Group, 03/2015 - 06/2017
- Member, Harvard IACS Advisory Board, 04/2014 - Present
- Session organizer
  - *Shots in the Box-Cox: Transformational Soccer Analytics*. Joint Statistical Meetings, 08/2018
  - *Accelerating Bayesian Computation by Intersecting Monte Carlo and Optimization*. Joint Statistical Meetings, 08/2016
  - *BayesBall: The Bayesian takeover in Sports*. International Society on Bayesian Analysis World Meeting, 06/2016
  - *Eye in the Sky: The Player Tracking Revolution in Sports Analytics*. Joint Statistical Meetings, 08/2014
  - *Recent Developments in Software for MCMC*. MCMSki, 01/2014
  - *Advances in Nonstationary Spatial Modeling*. Joint Statistical Meetings, 08/2013
  - *Identifiability – Pushing Data to the Limits*. Statistical Society of Canada Meeting, 06/2013
  - *Resiliency of Agriculture and Natural Resources to Climate Change and Variability*. Joint Statistical Meetings, 08/2010
- Associate Faculty, Harvard University Center for the Environment, 10/2013–08/2015
- Organizer, Harvard Statistics Colloquium Series, 07/2013–06/2014
- Lead organizer of Banff International Research Station (BIRS) workshop entitled *Advances in Scalable Bayesian Computation*, 03/2014

- Creator and developer of new Harvard course *Stat 183: Learning from Big Data*, 01/2014
- Referee of approximately 10-15 papers per year for *Journal of the American Statistical Association*, *Neural Information Processing Systems (NIPS)*, *Journal of Computational and Graphical Statistics*, *International Conference on Machine Learning (ICML)*, *Annals of Applied Statistics*, *Artificial Intelligence and Statistics (AISTATS)*, *Papers in Regional Science*, *Shock and Vibration*, *Journal of Agricultural, Biological, and Environmental Statistics*, *Structural Health Monitoring*, *Machine Learning*, *Statistics and Computing*, *Neurocomputing*, *WIRE Computational Statistics* and others
- Associate Editor (Student's Corner), International Society for Bayesian Analysis (ISBA) Bulletin, 08/2007–11/2011
- Head (2008, 2009, 2010, 2011) and Assistant (2007) UBC Dept. of Statistics TA Training Instructor
- Active member of the UBC Dept. of Statistics Short Term Consulting Service, 05/2007–10/2011
- Completed 3-day Instructional Skills Workshop, 09/2009
- Accepted into (and attended) the Summer School on Spatial Statistics. Statistical and Applied Mathematical Sciences Institute (SAMSI), 08/2009
- Accepted into (and attended) the International Graduate Summer School on Statistics and Climate Modeling. National Center for Atmospheric Research (NCAR), 08/2008
- Graduate Representative, UBC Dept. of Statistics, 05/2007–02/2008
- Vice President Internal, Student Union Society, University of the Fraser Valley, 02/2004–04/2005
- Student Representative, Student Union Society, University of the Fraser Valley, 09/2003–01/2004

### Honours and Awards

- Post-PhD (Harvard, Simon Fraser)
  - Sloan Sports Analytics Conference Research Paper finalist, 02/2018
  - Sloan Sports Analytics Conference Research Paper finalist, 03/2017
  - ASA Section on Statistics in Sports Significant Contributor Award, 08/2016
  - ISBA Lifetime Members Junior Researcher Award (750 USD), 06/2016
  - Sloan Sports Analytics Conference Research Paper finalist, 03/2016
  - Work selected for “Breaking News!” Session, IMS-ISBA Meeting, 01/2016
  - Sloan Sports Analytics Conference Research Paper winner (15,000 USD), 03/2015
  - Sloan Sports Analytics Conference Research Poster winner (1,000 USD), 03/2015
  - Sloan Sports Analytics Conference Research Paper finalist, 03/2014
- M.Sc./Ph.D. (University of British Columbia)
  - SSC Pierre Robillard Award (1,000 CDN), 05/2013
  - UBC Faculty of Science Graduate Award (1,000 CDN), 04/2013
  - Michael Smith Foundation for Health Research (MSFHR) Trainee Award (67,500 CDN), 10/2009–09/2012 (*Accepted at reduced amount*)
  - UBC Tuition Award (18,000 CDN), 09/2008–08/2012
  - JSM ENVR Paper Award (125 USD), 07/2012
  - ISBA Kyoto Travel Award (500 USD), 07/2012 (*Declined*)
  - UBC Department of Statistics Marshall Award (500 CDN), 06/2012
  - GeoMed Travel Award (500 CDN), 10/2011
  - Faculty of Science Graduate Award (15,000 CDN), 09/2009–09/2011
  - NSERC PGS-D (63,000 CDN), 09/2008–08/2011

- UBC Graduate Student Travel Award (800 CDN), 07/2007, 08/2011
- Faculty of Science Achievement Award for Teaching and Mentorship (1,000 CDN), 04/2011
- UBC Killam Graduate Teaching Award (1,000 CDN), 04/2009
- British Columbia Clean Air Fund Scholarship (1,000 CDN), 02/2009
- PhD Entrance Award (5,000 CDN), 09/2008
- Best Student Oral Presentation: WNAR/IMS Meeting (300 USD), 06/2008
- University Graduate Fellowship (8,000 CDN), 09/2007–08/2008
- BC Ferries Scholarship (500 CDN), 09/2007
- CMS-MITACS Joint Conference Student Travel Award (600 CDN), 06/2007
- M.Sc. Entrance Award (1,205 CDN), 09/2006
- B.Sc. (University of the Fraser Valley)
  - Garfield Weston Merit Scholarship (43,000 CDN), 09/2003–06/2006
  - Award for Excellence in 4th Year Mathematics, 04/2006
  - Doug McDowell Scholarship in Mathematics (600 CDN), 01/2006
  - Award in Recognition of Outstanding Volunteer Commitment to the Students of UCFV, 04/2005
  - Toastmaster’s Scholarship for Public Speaking (300 CDN), 04/2004
  - Envision Financial Award for Outstanding School and Community Service (1,000 CDN), 09/2003
  - BC Provincial Scholarship (1,000 CDN), 09/2003

### Refereed Publications

- **Bornn, L.**, Shephard, N., <sup>†</sup>Solgi, R. (2019) Moment Conditions and Bayesian Nonparametrics. *To appear in the Journal of the Royal Statistical Society – Series B.*
- <sup>†</sup>Daly-Grafstein, D., **Bornn, L.** (2019) Rao-Blackwellizing Field Goal Percentage. *To appear in the Journal of Quantitative Analysis in Sports.* *arXiv:1808.04871.*
- <sup>†</sup>Branson, Z., Rischard, M., **Bornn, L.**, Miratrix, L. (2019) A Nonparametric Bayesian Methodology for Regression Discontinuity Designs. *To appear in the Journal of Statistical Planning and Inference.*
- <sup>†</sup>Gerber, M., **Bornn, L.** (2018) Convergence Results for a Class of Time-Varying Simulated Annealing Algorithms. *Stochastic Processes and their Applications.* Vol. 128, 1073-1094.
- <sup>†</sup>Ward, P., Tankovich, M., Ramsden, J., Drust, B., **Bornn, L.** (2018) Volume and Intensity are Important Training Related Factors in Injury Incidence in American Football Athletes. *Sloan Sports Analytics Conference 2018 (Finalist).*
- <sup>†</sup>Fernandez, J., **Bornn, L.** (2018) Wide Open Spaces: A Statistical Technique for Measuring Space Creation in Professional Soccer *Sloan Sports Analytics Conference 2018 (Finalist).*
- <sup>†</sup>Liu, A., <sup>†</sup>Wang, L., **Bornn, L.**, and Farrar, C. (2018) Robust Structural Health Monitoring Under Environmental and Operational Uncertainty with Switching State-Space Autoregressive Models. *To appear in Structural Health Monitoring.*
- <sup>†</sup>Wu, S., **Bornn, L.** (2018) Modeling Offensive Player Movement in Professional Basketball. *To appear in The American Statistician.*
- <sup>†</sup>Franks, A., <sup>†</sup>D’Amour A., <sup>†</sup>Cervone, D., **Bornn, L.** (2017) Meta-Analytics: Tools for Understanding the Statistical Properties of Sports Metrics. *The Journal of Quantitative Analysis in Sports.* Vol. 12, 151-165.
- <sup>†</sup>van Bommel, M., **Bornn, L.** (2017) Adjusting for Scorekeeper Bias in NBA Box Scores. *Data Mining and Knowledge Discovery.* Vol. 31, 1622-1642.

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<sup>†</sup>Indicates students and other HQP

- †Gerber, M., **Bornn, L.** (2017) Improving Simulated Annealing through Derandomization. *The Journal of Global Optimization*. Vol. 68, 189-217.
- **Bornn, L.**, Pillai, N., Smith, A., Woodard., D. (2017) The Use of a Single Pseudo-Sample in Approximate Bayesian Computation. *Statistics and Computing*. Vol. 27, 583-590.
- †Miller, A., **Bornn, L.** (2017) Possession Sketches: Mapping NBA Strategies. *Sloan Sports Analytics Conference 2017 (Finalist)*.
- †Antonelli, J., Cefalu, M., **Bornn, L.** (2016) The Positive Effects of Population Based Preferential Sampling in Environmental Epidemiology. *Biostatistics*. Vol. 17, 764-778.
- †Cervone, D., †D'Amour, A., **Bornn, L.**, Goldsberry, K. (2016) A Multiresolution Stochastic Process Model for Predicting Basketball Possession Outcomes. *Journal of the American Statistical Association*. Vol. 111, 585-599.
- **Bornn, L.**, Farrar, C., Higdon, D., Murphy, K. (2016) Modeling and Diagnosis of Structural Systems through Sparse Dynamic Graphical Models. *Mechanical Systems and Signal Processing*. Vol. 74, 133-143.
- †Bojinov, I., **Bornn, L.** (2016) The Pressing Game: Optimal Defensive Disruption in Soccer. *Sloan Sports Analytics Conference 2016 (Finalist)*.
- Chen, Y., **Bornn, L.**, De Freitas, N., Eskelin, M., Fang, J., Welling, M. (2016) Herded Gibbs Sampling. *Journal of Machine Learning Research*. Vol. 17, 1-29.
- †Franks, A., †Miller, A., **Bornn, L.**, Goldsberry, K. (2015) Counterpoints: Advanced Defensive Metrics for NBA Basketball. *Sloan Sports Analytics Conference 2015 (Finalist and Co-Winner)*.
- †Gopalan, G., Vrtilek, S., **Bornn, L.** (2015) Classifying X-ray Binaries: A Probabilistic Approach. *The Astrophysical Journal*. Vol. 809, No. 1.
- †Director, H., **Bornn, L.** (2015) Connecting Point-Level and Gridded Moments in the Analysis of Climate Data. *Journal of Climate*. Vol. 28, 3496-3510.
- †Franks, A., †Miller, A., **Bornn, L.**, Goldsberry, K. (2015) Characterizing the Spatial Structure of Defensive Skill in Professional Basketball. *Annals of Applied Statistics*. Vol. 9, No. 1, 94-121.
- †Yuan, L., †Liu, A., †Yeh, A., †Kaufman, A., †Reece, A., †Bull, P., †Franks, A., †Wang, S., †Illushin, D., **Bornn, L.**, (2015) A Mixture-of-Modelers Approach to Forecasting NCAA Tournament Outcomes. *Journal of Quantitative Analysis in Sports*. Vol. 11, Issue 1, 13-27.
- †Cervone, D., †D'Amour, A., **Bornn, L.**, Goldsberry, K. (2014) POINTWISE: Predicting Points and Valuing Decisions in Real Time with NBA Optical Tracking Data. *Sloan Sports Analytics Conference 2014 (Finalist)*.
- †Miller, A., **Bornn, L.**, Adams, R., Goldsberry, K. (2014) Factorized Point Process Intensities: A Spatial Analysis of Professional Basketball. *International Conference on Machine Learning (ICML)*.
- **Bornn, L.**, Jacob, P., Del Moral, P., Doucet, A. (2013) An Adaptive Interacting Wang-Landau Algorithm for Automatic Density Exploration. *Journal of Computational and Graphical Statistics*. Vol. 22, Issue 3, 749-773.
- **Bornn, L.** (2013) PAWL-Forced Simulated Tempering. *Proc. Bayesian Young Statisticians Meeting*.
- **Bornn, L.**, Shaddick, G., Zidek, J. (2012) Modeling Non-Stationary Processes Through Dimension Expansion. *Journal of the American Statistical Association*. Vol. 107, No. 497, 281-289.
- **Bornn, L.**, Caron, F. (2012) Bayesian Clustering in Decomposable Graphs. *Bayesian Analysis*. Vol. 6, No. 4, 829-846.
- **Bornn, L.**, Zidek, J. (2011) Efficient Stabilization of Crop Yield Prediction in the Canadian Prairies. *Agricultural and Forest Meteorology*. Vol. 152, Pages 223-232.

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†Indicates students and other HQP

- Atamturktur, S., **Bornn, L.**, Hemez, F. (2011) Vibration Characteristics of Vaulted Masonry Monuments Undergoing Differential Support Settlement. *Engineering Structures*. Vol. 33, 2472–2484.
- El-Zammar, D., Yan, M., Huang, C., Fang, D., Petigara, F., **Bornn, L.**, Ngai, T., and others (2011) Assessment and Management of Anemia in a Population of Children Living in the Indian Himalayas: A Student-Led Initiative. *UBC Medical Journal*. Vol. 2, Issue 2, 12-18.
- **Bornn, L.**, Farrar, C.R., Park, G. (2010) Damage Detection in Initially Nonlinear Systems. *International Journal of Engineering Science*. Vol. 48, 909-920.
- **Bornn, L.**, Doucet, A., Gottardo, R. (2010) An Efficient Computational Approach for Prior Sensitivity and Cross-validation. *The Canadian Journal of Statistics*, Vol. 38, Issue 1, 47-64.
- **Bornn, L.**, Farrar, C., Park, G., Farinholt, K. (2009) Structural Health Monitoring with Autoregressive Support Vector Machines. *Journal of Vibration and Acoustics*. 131:021004.

### Invited Book Chapters, Articles, and Comments

- **Bornn, L.**, †Fernandez, J., †Cervone, D. (2018) Soccer analytics: Unravelling the complexity of “the beautiful game”. To appear in *Significance*.
- **Bornn, L.**, †Cervone, D., †Franks, A., †Miller, A. (2017) Studying Basketball Through the Lens of Player Tracking Data. To appear in *The Handbook of Sports Analytics*.
- Caron, F., **Bornn, L.** (2014) Comment on Article by Finegold and Drton. *Bayesian Analysis*. Vol. 9, 551-556.
- **Bornn, L.**, Cornebise, J. (2010) Comment on “Riemann manifold Langevin and Hamiltonian Monte Carlo methods”. *Journal of the Royal Statistical Society Series B*. Vol. 73, 123-214.
- **Bornn, L.**, Tabet, A. (2010) Comment on “Particle Markov Chain Monte Carlo”. *Journal of the Royal Statistical Society Series B*. Vol. 72, 269-342.

### Proceedings, Reports, Etc.

- †Sandholtz, N., **Bornn, L.** (2018) Replaying the NBA. *Sloan Sports Analytics Conference 2018*.
- †Mehrasa, N., †Zhong, Y., Tung, F., **Bornn, L.**, Mori, G. (2018) Deep Learning of Player Trajectory Representations for Team Activity Analysis. *Sloan Sports Analytics Conference 2018*.
- †van Bommel, M., **Bornn, L.**, (2017) The Van Exel Effect: Adjusting for Scorekeeper Bias in NBA Box Scores. *Sloan Sports Analytics Conference 2017*.
- **Bornn, L.**, Shephard, N., †Solgi, R. (2016) Nonparametric Hierarchical Bayesian Quantiles. *arXiv:1605.02385*.
- †Cervone, D., **Bornn, L.**, Goldsberry, K. (2016) NBA Court Realty. *Sloan Sports Analytics Conference 2016*.
- †D’Amour, A., †Cervone, D., **Bornn, L.**, Goldsberry, K. (2015) Move or Die: How Ball Movement Creates Open Shots in the NBA. *Sloan Sports Analytics Conference 2015*.
- †Gopalan, G., **Bornn, L.** (2015) FastGP: An R Package for Gaussian Processes. *arXiv:1507.06055*.
- †D’Amour, A., †Cervone, D., **Bornn, L.**, Goldsberry, K. (2015) Move or Die: How Ball Movement Creates Open Shots in the NBA. *Sloan Sports Analytics Conference 2015*.
- †Yang, J., †Wang, X., Protopapas, P. **Bornn, L.** (2015) Fast and Optimal Nonparametric Sequential Design for Astronomical Observations. *arXiv:1501.02467*.
- †Batmanghelich, N., Quon, G., Kulesza, A., Kellis, M., Golland, P., **Bornn, L.** (2014) Diversifying Sparsity Using Variational Determinantal Point Processes. *arXiv:1411.6307*.
- †Cackler, J., **Bornn, L.** (2014) Understanding the Effect of Gerrymandering on Voter Influence through Shape-based Metrics. *Unpublished*.

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†Indicates students and other HQP

- **Bornn, L.**, <sup>†</sup>Cherkassky, M. (2013) Sequential Monte Carlo Bandits. *arXiv:1310.1404*.
- **Bornn, L.**, Anghel, M., Steinwart, I. (2012) Forecasting with Historical Data or Process Knowledge under Misspecification: A Comparison. *arXiv:1205.3845*.
- Caron, F., **Bornn, L.**, Doucet, A. (2012) Sparsity-Promoting Bayesian Dynamic Linear Models. *arXiv:1203.0106*.
- **Bornn, L.** (2012) Modeling Latent Correlation Structures with Application to Agricultural and Environmental Science. *Ph.D. Thesis*.
- Farrar, C., Park, G., Anghel, M., Bement, A., **Bornn, L.** (2011) Structural Health Monitoring, Data Analysis and Modeling for Ship Structures. *Los Alamos Technical Report*. LA-UR-11-05494.
- Jacob, P., **Bornn, L.** (2011) PAWL: An R Package for Automated Monte Carlo. Available on CRAN at <http://cran.r-project.org/web/packages/PAWL/index.html>.
- **Bornn, L.**, Gottardo, R., Doucet, A. (2010) Grouping Priors and the Bayesian Elastic Net. *UBC Department of Statistics Technical Report #254*. Also available on arXiv.
- Farrar, C.R., **Bornn, L.**, Park, G., Farinholt, K.M. (2009) Damage Detection in Initially Nonlinear Systems. *Proceedings of 7th International Workshop on Structural Health Monitoring*. September 9-11 2009, Stanford, CA.
- **Bornn, L.**, Farrar, C.R., Park, G., Farinholt, K.M. (2009) Support Vector Autoregression in the Structural Health Monitoring Paradigm. *Proceedings of 7th International Workshop on Structural Health Monitoring*. September 9-11 2009, Stanford, CA.
- Bornn, L. (2008) Statistical Solutions For and From Signal Processing. *M.Sc. Thesis*.
- Higdon, D., Anderson-Cook, C., Gattiker, J., Huzurbazar, A., Moore, L., Picard, R., Press, W., Williams, B., **Bornn, L.**, Nelson, R. (2008) QMU for Advanced Certification: Identifying Existing Limitations with Discussion of Solution Strategies. *Los Alamos Technical Report*. LA-UR-08-06887.

## Media Recognition

- 2017+ - Multiple interviews and article coverage (SiriusXM, CBC, TSN, Sportsnet, NBC Sports)
- 10/2015 - AMS What's Happening in the Mathematical Sciences "Sports Analytics"
- 03/2015 - Columbia Journalism Review "In Defense of Defense"
- 02/2015 - Grantland.com "Department of Defense"
- 02/2015 - Ultimo Uomo "La Rivincita dei Nerd"
- 11/2014 - Wired "Meet the Mapmakers Who are Changing the NBA"
- 04/2014 - Harvard Gazette "For Big Data, Big Thinking"
- 03/2014 - SiriusXM Radio Interview
- 03/2014 - Boston Globe "A New (More Accurate?) Way to Evaluate NBA Players"
- 03/2014 - Harvard Gazette "Bringing Order to the Court"
- 03/2014 - NBA.com "Putting Player Tracking to Work"
- 02/2014 - Bleacher Report "Debating the Value of the NBA's Latest Data Breakthrough"
- 02/2014 - Deadspin "This New NBA Stat is a Huge Step Forward for Basketball Analysis"
- 02/2014 - ESPN Magazine "What's the Big Idea"
- 02/2014 - Grantland.com "DataBall"



## Invited Presentations

- 11/2019 - FC Barcelona Sports Technology Symposium (Barcelona, Spain)
- 09/2018 - Department of Biostatistics, McGill University (Montreal, QC)
- 05/2018 - Fields Institute (Toronto, ON)
- 05/2018 - Peter G. Hall Conference (Davis, CA)
- 03/2018 - Department of Statistics, NC State (Raleigh, NC)
- 02/2018 - Sloan Sports Analytics Conference (Boston, MA)
- 02/2018 - OptaPro Forum (London, UK)
- 01/2018 - Sports Performance Data and Fan Engagement Summit (San Francisco, CA)
- 10/2017 - Carnegie Mellon Sports Analytics Conference (Pittsburgh, PA)
- 10/2017 - Department of Statistics, UC Davis (Davis, CA)
- 09/2017 - Harvard University Computational Statistics Seminar (Cambridge, MA)
- 07/2017 - NBA Summer League (Vegas, NV)
- 05/2017 - BC Data Colloquium (Vancouver, BC)
- 08/2016 - SFU Symposium on Mathematics and Computation (Burnaby, BC)
- 08/2016 - Microsoft Azure (Redmond, WA)
- 06/2016 - ISBA World Meeting (Sardinia, Italy)
- 05/2016 - Statistical Society of Canada Meeting (St. Catharines, ON)
- 05/2016 - Perspectives on High-dimensional Data Analysis (Toronto, ON)
- 05/2016 - Spring Research Conference (Chicago, IL)
- 03/2016 - Department of Statistics, University of British Columbia (Vancouver, BC)
- 03/2016 - Department of Statistics, University of Toronto (Toronto, ON)
- 02/2016 - Workshop on Computational Statistics and Molecular Simulation (Paris, France)
- 11/2015 - FC Barcelona Sports Technology Symposium (Barcelona, Spain)
- 10/2015 - Visualization in Data Science (Chicago, IL)
- 08/2015 - Workshop on Applied Topology and High-Dimensional Data Analysis (Victoria, BC)
- 08/2015 - Joint Statistical Meetings (Seattle, WA)
- 06/2015 - Probabilistic Programming and Machine Learning (Portland, OR)
- 05/2015 - Big Data in Environmental Sciences (Vancouver, BC)
- 04/2015 - New England Statistics Symposium (Storrs, CT)
- 08/2014 - Joint Statistical Meetings (Boston, MA)
- 06/2014 - Meeting of the International Chinese Statistical Association (Portland, OR)
- 05/2014 - Big'MC (Paris, FR)
- 04/2014 - New England Statistics Symposium (Cambridge, MA)
- 04/2014 - Department of Statistics, University of Washington (Seattle, WA)
- 04/2014 - Machine Learning Seminar Series, Duke University (Durham, NC)
- 04/2014 - Department of Statistics, Simon Fraser University (Burnaby, BC)
- 04/2014 - Monte Carlo and Quasi-Monte Carlo Methods in Scientific Computing (Leuven, BE)
- 03/2014 - Advances in Scalable Bayesian Computation (Banff, AB)
- 01/2014 - Institute for Applied Computer Science Symposium (Cambridge, MA)
- 01/2014 - MCMSki (Chamonix, France)

- 11/2013 - Department of Statistics, Oxford University (Oxford, UK)
- 10/2013 - Centre de Recherches Mathématiques (Montreal, QC)
- 10/2013 - Booth School of Business, University of Chicago (Chicago, IL)
- 10/2013 - Department of Statistics, Boston University (Boston, MA)
- 08/2013 - Joint Statistical Meetings (Montreal, QC)
- 05/2013 - Statistical Society of Canada Meeting (Edmonton, AB)
- 04/2013 - Department of Biostatistics, Harvard University (Boston, MA)
- 03/2013 - Los Alamos National Labs (Los Alamos, NM)
- 02/2013 - Department of Applied Mathematics, Brown University (Providence, RI)
- 10/2012 - ENSAE (Paris, France)
- 10/2012 - Ecole Polytechnique (Palaiseau, France)
- 06/2012 - Bayesian Inference for Latent Gaussian Models (Trondheim, Norway)
- 05/2012 - Spring Research Conference (Cambridge, MA)
- 03/2012 - Department of Mathematics, University of Victoria (Victoria, BC)
- 03/2012 - Department of Statistics, Simon Fraser University (Vancouver, BC)
- 02/2012 - Department of Statistics, Harvard University (Cambridge, MA)
- 02/2012 - Department of Statistics, Columbia University (New York, NY)
- 02/2012 - Department of Statistics, University of British Columbia (Vancouver, BC)
- 04/2011 - INRIA Bordeaux South-West (Bordeaux, France)
- 01/2011 - MCMSki (Park City, UT)
- 01/2011 - AdapSkIII: Advances in Monte Carlo (Park City, UT)
- 05/2010 - Institut de Mathématiques de Bordeaux (Bordeaux, France)
- 01/2010 - Sustainable Agriculture Environmental Systems Workshop (Vancouver, BC)
- 09/2008 - UBC Statistics Seminar Series (Vancouver, BC)
- 07/2008 - Los Alamos National Laboratory (Los Alamos, NM)
- 04/2008 - Conference on Monte Carlo Methods: Theory and Applications (Providence, RI)
- 11/2007 - UBC/SFU Joint Student Workshop (Burnaby, BC)
- 10/2007 - University of the Fraser Valley seminar series (Abbotsford, BC)
- 07/2007 - Banff International Research Station (Banff, AB)

### **Contributed Presentations**

- 01/2016 - MCMSki (Lenzerheide, Switzerland)
- 08/2014 - Joint Statistical Meetings (Boston, MA)
- 09/2013 - Bayesian Inference for Latent Gaussian Models (Reykjavik, Iceland)
- 09/2013 - New England Symposium on Statistics in Sports (Boston, MA)
- 07/2013 - IMS New Researcher Conference (Montreal, QC)
- 06/2013 - Bayesian Young Statisticians Meeting (Milan, Italy)
- 06/2013 - Meeting on Bayesian Nonparametrics (Amsterdam, NL)
- 06/2013 - Bayesian Inference in Stochastic Processes (Milan, Italy)
- 05/2013 - New England Machine Learning Day (Cambridge, MA)
- 04/2013 - New England Statistics Symposium (Storrs, CT)

- 08/2012 - Joint Statistical Meetings (San Diego, CA)
- 10/2011 - GeoMed (Victoria, BC)
- 08/2011 - SAMSI Climate Modeling Opening Workshop (Pleasanton, CA)
- 08/2011 - Joint Statistical Meetings (Miami, FL)
- 04/2011 - International Biometric Society (Bordeaux, France)
- 04/2011 - PIMS Young Researcher Meeting (Vancouver, BC)
- 01/2011 - MCMSki (Park City, UT)
- 08/2010 - Joint Statistical Meetings (Vancouver, BC)
- 06/2010 - Valencia Meeting on Bayesian Statistics (Valencia, Spain)
- 06/2010 - Sparse Structures: Statistical Theory and Practice (Bristol, UK)
- 06/2009 - Statistical Methods for Dynamic System Models (Vancouver, BC)
- 05/2009 - Statistical Society of Canada Annual Meeting (Vancouver, BC)
- 07/2008 - LANL Student Symposium (Los Alamos, NM)
- 06/2008 - WNAR Annual Conference (Davis, CA). Winner, Best Student Presentation
- 06/2008 - Second Canada-France Congress (Montreal, QC)
- 10/2007 - Pacific Northwest Statistics Meeting (Vancouver, BC)
- 05/2007 - CMS-MITACS Joint Conference (Winnipeg, MB)

### Research Funding

- 10/2017: Amazon Research Award (10,000 USD), PI
- 09/2016: NSERC Engage Grant (25,000 CAD), PI
- 01/2016: SFU TLC Development Grant (5,000 CAD), PI
- 10/2015: Amazon Research Award (15,000 USD), PI
- 04/2015: NSERC Discovery Grant (110,000 CAD), PI
- 04/2015: ARO Young Investigator Award (237,472 USD), PI
- 01/2015: NSF (330,000 USD), Co-PI (w/ Luke Miratrix)
- 04/2014: DARPA Probabilistic Programming & Machine Learning (207,000 USD), PI
- 12/2013: William F. Milton Fund (40,000 USD), PI
- 04/2013: Harvard Center for the Environment, Faculty Grant for Exploratory Research (32,800 USD), Co-PI (w/ Natesh Pillai, Art Dempster, and Peter Huybers)

### Highly Qualified Personnel

- Students
  - Nathan Sandholtz (Simon Fraser PhD)
  - Jacob Mortensen (Simon Fraser PhD)
  - Javier Fernandez (Polytechnic University of Catalonia PhD)
  - Daniel Daly-Grafstein (Simon Fraser MSc)
- Alumni
  - Patrick Ward (Liverpool John Moores PhD – primary supervisor Barry Drust), now at *Seattle Seahawks*
  - Andrew Miller (Harvard PhD – primary supervisor Ryan Adams), now postdoc at *Columbia University*

- Matthew van Bommel (Simon Fraser MSc 2017), now at the *Sacramento Kings*
- Reza Solgi (Harvard Postdoc 2017 – jointly supervised with Neil Shephard), now at *Amazon*
- Yatao Zhong (Simon Fraser MSc 2017 – primary supervisor Greg Mori), now at *Microsoft Research*
- Nazanin Mehrasa (Simon Fraser MSc 2017 – primary supervisor Greg Mori), now PhD student at *Simon Fraser University*
- Mathieu Gerber (Harvard Postdoc 2016), now Assistant Professor at *University of Bristol*
- Alexander D’Amour (Harvard PhD 2016 – primary supervisor Edo Airoldi), now Visiting Assistant Professor at *UC Berkeley*
- Alexander Franks (Harvard PhD 2015 – primary supervisor Edo Airoldi), now Assistant Professor at *UC Santa Barbara*
- Daniel Cervone (Harvard PhD 2015 – primary supervisor Natesh Pillai), now Researcher at *Los Angeles Dodgers*
- Giri Gopalan (Harvard AM 2015), now PhD student at *University of Iceland*
- Hannah Director (Harvard AM 2015), now PhD student at *University of Washington*
- David Zhang (Harvard AB 2015), now at *AQR Capital Management*
- Ryan Grossman (Harvard AB 2015), now at *Tinder*
- Anthony Liu (Harvard AB 2014), now at *Analytics Operations Engineering*
- Eric Hendey (Harvard AB 2014), now at *Evercore*
- Jessica Hwang (Harvard AB 2013), now PhD student at *Stanford*
- Michael Cherkassky (Harvard AB 2013), now at *Pipewave, Inc.*
- Eunice Kim (Harvard Research Fellow 2013), now at *Amherst College*

### **Professional Memberships**

Statistical Society of Canada, American Statistical Association, International Society for Bayesian Analysis, Institute of Mathematical Statistics