BAMDAD HOSSEINI

Department of Mathematics

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Male

Iranian citizen

Canadian permanent resident

EDUCATION

- Ph.D. in Applied and Computational Mathematics, Simon Fraser University (SFU), Burnaby, Canada.   2013-2017

Thesis: "Finding beauty in the dissonance: analysis and applications of Bayesian inverse problems"

(Supervisors: Profs. John M. Stockie and Nilima Nigam)

- M.Sc. in Applied and Computational Mathematics, SFU, Burnaby, Canada.   2011–2013

Thesis: "Dispersion of pollutants in the atmosphere: A numerical study"

(Supervisor: Prof. John M. Stockie)

- B.Sc. in Mechanical Engineering , Sharif University of Technology, Tehran, Iran.   2006–2011

Thesis: "Simulating electrophoresis of dilute polymer solutions with Dissipative Particle Dynamics"

(Supervisor: Prof. Mohammad Said Saidi)

ACADEMIC EXPERIENCE

- Postdoctoral Fellow, Department of Computing and Mathematical Sciences, California Institute of Technology (Caltech), Pasadena, USA.   2018-2020

(Supervisor: Prof. Andrew M. Stuart)

PUBLICATIONS

[1] Bamdad Hosseini. "Well-posed Bayesian inverse problems with infinitely divisible and heavy-tailed prior measures". *SIAM/ASA Journal on Uncertainty Quantification* 5 (1 2017), pp. 1024–1060. DOI: 10.1137/16M1096372.

[2] Bamdad Hosseini and Nilima Nigam. "Well-posed Bayesian inverse problems: priors with exponential tails". *SIAM/ASA Journal on Uncertainty Quantification* 5 (1 2017), pp. 436–465. DOI: 10.1137/16M1076824.

[3] Bamdad Hosseini and John M Stockie. "Estimating airborne particulate emissions using a finite-volume forward solver coupled with a Bayesian inversion approach". *Computers and Fluids* 154 (2017), pp. 27–43. DOI: 10.1016/j.compfluid.2017.05.025.

[4] Bamdad Hosseini et al. "A Bayesian approach for estimating acoustic aberrations in high intensity focused ultrasound treatment" (2016). *Submitted to Applied Mathematics and Computation*. URL: http://arxiv.org/abs/1602.08080.

[5] Bamdad Hosseini and John M. Stockie. "Bayesian estimation of airborne fugitive emissions using a Gaussian plume model". *Atmospheric Environment* 141 (2016), pp. 122–138. DOI: 10.1016/j.atmosenv.2016.06.046.

[6] Bamdad Hosseini, Nilima Nigam, and John M. Stockie. "On smooth regularizations of the Dirac delta distribution". *Journal of Computational Physics* 305 (2016), pp. 423–447. DOI: 10.1016/j.jcp.2015.10.054.

[7] Bamdad Hosseini and Roohollah Hashemi. "Solution of Burgers' equation using a local-RBF meshless method". *International Journal for Computational Methods in Engineering Science and Mechanics* 12 (1 2011), pp. 44–58. DOI: 10.1080/15502287.2010.540303.

Fellowships and Scholarships

• Postdoctoral Fellowship	NSERC	2018–2020
• Michael Stevenson Graduate Scholarship	SFU	2016–2017
• Department of Mathematics Graduate Scholarship	SFU	Sep 2016
• President's Ph.D. Scholarship	SFU	Jan 2016
• Department of Mathematics Graduate Scholarship	SFU	May 2015
• Nominated for the Vanier Canada Graduate Scholarship	SFU	Nov 2014
• Special Graduate Entrance Scholarship	SFU	Sep 2013
• Department of Mathematics Graduate Scholarship	SFU	May 2013

Awards and Recognitions

• SIAM Student Paper Prize for "Well-posed Bayesian inverse problems: priors with exponential tails" [5].	Jul 2017
• Runner Up Prize for the Student Presentation in a Special Session award, AMMCS-CAIMS Congress, Waterloo, Canada.	Jun 2015
• Best Poster Award, Symposium on Mathematics and Computation, SFU, Burnaby, Canada.	Aug 2014
• Student Chapter Certificate of Recognition, SIAM.	Sep 2014

Supervision Experience

• Juan García, M.Sc, *Thesis: Source inversion and parameter estimation in atmospheric dispersion with Gaussian process surrogate models.*	2015–2017

Juan is a masters student at SFU that I co-supervised with Prof. John M. Stockie. I defined Juan's thesis project and I have weekly one-on-one meetings with him. I guide him in navigating the literature and overcoming any mathematical and technical issues he encounters.

Teaching Experience at SFU

• Numerical Analysis I	Instructor	Summer 2017
• Computational Workshop Coordinator	Instructor	Fall 2016
• Computational Workshop Coordinator	Instructor	Spring 2016
• Computational Workshop Coordinator	Instructor	Fall 2015
• Intro. to. Math. Methods in Physics	Teaching Assistant	Fall 2014
• Numerical Analysis I	Teaching Assistant	Fall 2014
• Numerical Analysis I	Teaching Assistant	Summer 2014
• Numerical Analysis I	Teaching Assistant	Spring 2013
• Numerical Analysis I	Teaching Assistant	Spring 2012
• Calculus Workshop	Teaching Assistant	Fall 2012
• Calculus Workshop	Teaching Assistant	Spring 2011
• Calculus Workshop	Teaching Assistant	Fall 2011

Research Funding and Grant Applications

• Mitacs-Accelerate graduate research internship program	\$ 30,000	Mitacs and Teck Resources Ltd.	2013–2014

Conferences and Invited Talks

• "Non-Gaussian priors in Bayesian inverse problems: from theory to applications". SCAIM Seminar Series, University of British Columbia, Vancouver, Canada.	Oct 2017
• "Well-posed Bayesian inverse problems: Priors with exponential tails". SIAM Annual Meeting, Pittsburgh, USA.	Jul 2017
• "Well-posed Bayesian inverse problems beyond Gaussian priors". Applied Inverse Problems, Hangzhou, China.	May 2017
• "An MCMC algorithm for Bayesian inference with self-decomposable priors". CASCADE RAIN, Vancouver, Canada.	Apr 2017
• "Bayesian inverse problems with infinitely divisible priors". SIAM Conference on Computational Science and Engineering, Atlanta, USA.	Mar 2017
• "Well-posed Bayesian inverse problems: beyond Gaussian priors". Center for Computational Geoscience and Optimization, ICES, Austin, USA.	Sep 2017
• "Bayesian estimation of acoustic aberrations in high intensity focused ultrasound treatment". CAIMS Annual Meeting, Edmonton, Canada.	Jun 2016
• "Smooth regularizations of the Dirac delta distribution". AMMCS-CAIMS Congress, Waterloo, Canada.	Jun 2015
• "Estimating fugitive emissions of airborne particulates using a Gaussian plume model". AMMCS-CAIMS Congress, Waterloo, Canada.	Jun 2015

Professional Memberships

• Member	American Statistical Association (ASA)	since 2015
• Member	Society for Industrial and Applied Mathematics (SIAM)	since 2011
• Member	American Mathematical Society (AMS)	since 2011
• President	SIAM student chapter at Simon Fraser University	2011–2015

Journal Reviewing

• Mathematical Review	AMS
• SIAM/ASA Journal on Uncertainty Quantification	SIAM/ASA
• Journal of Engineering Mathematics	Springer
• Atmospheric Environment	Elsevier
• Journal of Hazardous Materials	Elsevier
• Journal of Environmental Chemical Engineering	Elsevier
• International Journal of Environmental Science and Technology	Springer

Organized Events and Volunteer work

• Applicable Analysis Seminar Series	SFU	since 2016
• Graduate Mathematical Modelling in Industry Workshop	PIMS/UBC	Aug 2016
• Careers in Math Seminar	SFU	Feb 2014
• Software Carpentry Bootcamp	SFU	Feb 2014
• Finite Element Modelling Workshop	SFU	Feb 2014

Attended Workshops and Conferences

- Short Course on PDEs with deal.II — PIMS, UBC, Vancouver, Canada — Aug 2016
- Introduction to Uncertainty Quantification — IMA, Minneapolis, U.S.A — Jun 2015
- MASDOC/EQUIP Workshop on Bayesian Inverse problems — Warwick University, Coventry, United Kingdom — Jun 2015
- SIAM conference on computational science and engineering — Utah, U.S.A — Mar 2015
- Inverse problems from theory to applications — Bristol, United Kingdom — Aug 2014
- Fields-Mprime Industrial problem solving workshop — Fields institute, Toronto, Canada — Aug 2014

Software expertise

- Programming languages and environments: MATLAB, C++, Fortran, Python, R.
- Scientific computing packages: Deal.II, FreeFem++, CLAWPACK, CVX, SPGL1, Rice Wavelet Toolbox, Chebfun.