BAMDAD HOSSEINI

Computing & Mathematical Sciences
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Male
Iranian citizen
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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. "A Metropolis-Hastings algorithm for posterior measures with self-decomposable priors" (2018). *Submitted to SIAM/ASA JUQ*. URL: https://arxiv.org/abs/1804.07833.

[2] 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.

[3] 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.

[4] 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.

[5] Bamdad Hosseini et al. "A Bayesian approach for estimating acoustic aberrations in high intensity focused ultrasound treatment" (2017). *Submitted to CICP*. URL: http://arxiv.org/abs/1602.08080.

[6] 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.

[7] 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.

[8] 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: Parameter estimation and uncertainty quantification applied to advection-diffusion problems arising in atmospheric sources inversion.* 2015–2017

Juan was a masters student at SFU that I co-supervised with Prof. John M. Stockie. I defined Juan's thesis project and had weekly one-on-one meetings with him. I helped Juan navigate the literature and overcome mathematical and technical issues in his work.

Teaching Experience

• Introduction to PDEs	Lecturer	Caltech	Fall 2018
• Numerical Analysis I	Lecturer	SFU	Summer 2017
• Computational Workshop Coordinator	Instructor	SFU	Fall 2016
• Computational Workshop Coordinator	Instructor	SFU	Spring 2016
• Computational Workshop Coordinator	Instructor	SFU	Fall 2015
• Intro. to. Math. Methods in Physics	TA	SFU	Fall 2014
• Numerical Analysis I	TA	SFU	Fall 2014
• Numerical Analysis I	TA	SFU	Summer 2014
• Numerical Analysis I	TA	SFU	Spring 2013
• Numerical Analysis I	TA	SFU	Spring 2012
• Calculus Workshop	TA	SFU	Fall 2012
• Calculus Workshop	TA	SFU	Spring 2011
• Calculus Workshop	TA	SFU	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

• "A Metropolis-Hastings algorithm for posterior measures with self-decomposable priors". SOCAMS 2018, University of California Santa Barbara, Santa Barbara, USA.	Apr 2018
• "Non-Gaussian priors in Bayesian inverse problems: from theory to applications". CMX Seminar Series, Caltech, Pasadena, USA.	Jan 2018
• "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

• Inverse Problems	IOPscience
• 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 Service

• Recent Advances in Scientific Computing Mini-symposium	CAIMS2018	Jun 2018
• Applicable Analysis Seminar Series	SFU	2016–2017
• 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

• BIRS Workshop on Spectral Geometry	BIRS, Banff, Canada	Jul 2018
• CRISM Summer School in Computational Statistics	LMS, University of Warwick, Coventry, United Kingdom	Jul 2018
• SIAM Conference on Uncertainty Quantification	Garden Grove, California, USA	Apr 2018
• Inverse Problems and Machine Learning	CMX, Caltech, Pasadena, USA	Feb 2018
• 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	University of Warwick , Coventry, United Kingdom	Jun 2015
• SIAM Conference on Computational Science and Engineering	Utah, USA	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.