Behrang Mahjani

CONTACT INFORMATION

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RESEARCH INTERESTS

My research interests lie generally in the fields of statistical computing with focus on applications from life science. Statistical computing is the application of scientific computing and computer science to statistics.

EDUCATION

PhD, Scientific computing, 2011-2016, Uppsala University, Uppsala, Sweden

- Thesis Topic: *Methods from statistical computing for genetic analysis of complex traits*
- Supervisor: Professor Sverker Holmgren
- Co-supervisors: Professor Lars Rönnegård, Dr. Carl Nettelblad

M.S., Engineering Mathematics and Computational Science ***(with specialization in Mathematical Statistics)***, 2008-2011, Chalmers University of Technology, Gothenburg, Sweden

- Thesis Topic: *Exploring connectivity of random subgraphs of a graph*
- Supervisor: Professor Jeffrey Steif

M.S., Complex Adaptive Systems, 2005-2008, Chalmers University of Technology, Gothenburg, Sweden

- First Thesis Topic: *Implementing two simplified coalescent algorithms*
- Supervisor: Professor Bernhard Mehlig
- Second Thesis Topic: *Analyzing two simplified coalescent algorithms*
- Supervisor: Dr. Anders Eriksson

B.S., Applied Mathematics, 2000-2004, K.N.T University of Technology, Tehran, Iran

ACADEMIC EXPERIENCE

Uppsala University, Uppsala, Sweden

Teaching **2011 to present**

- Developing and teaching a new course in Advanced Statistical Computing (Postgraduate course), Autumn 2015.
- Scientific computing II (Undergraduate course), Autumn 2015. Responsible for labs, problem solving and projects.
- Computer-intensive Statistics and Data Mining (Graduate course), Autumn-Spring 2014-15, Autumn-Spring 2015-16. Responsible for three labs and six lectures. 1 lecture in advanced computational methods in statistics, 5 lectures in random number generators, MC and MCMC methods.
- Computer-intensive Statistics and Data Mining (Graduate course), Spring 2013, Autumn-Spring 2013-14. Responsible for three labs and one lecture.
- Computer-intensive Statistics and Data Mining (Graduate course), Spring 2012, Responsible for developing and teaching 3 new labs and 1 lecture in advanced computational methods in statistics.
- Computational Finance (Graduate course), Spring 2012, Responsible for labs, projects and tutoring students.

Supervision **2015 to present**

- Co-supervisor of a project course (graduate level). Title: QTL as a service

Reviewer for Statistics, A Journal of Theoretical and Applied Statistics

Center of Complex Systems Research, K.N.T University of Technology, Tehran, Iran

Distance collaboration, resulted in presenting two posters in European Conference on Complex Systems. **2007 to 2011**

Projects:

- Application of fractals in Electrochemistry, 2010
- Anticipation, 2009
- The Complex Mindset, 2007

K.N.T University of Technology, Tehran, Iran

Teaching Assistant **2004 to 2005**

- Advanced Computer programming using C++, Responsible for computer labs and problem solving.

Head of Mathematics Student Union **2002 to 2003**

Publications

Behrang Mahjani, Lars Rönnegård, Lars Eldén. Fitting Linear Mixed Models using Sparse Matrix Methods and Lanczos factorization. Submitted to Journal of Statistics and Computing.

QTL as a service, Behrang Mahjani, Salman Toor, Carl Nettelblad, Sverker Holmgren. Manuscript will be submitted to Journal of Bioinformatics (Application Notes) in Dec 2015.

Behrang Mahjani, Salman Toor, Carl Nettelblad, Sverker Holmgren. A flexible computational framework using R and Map-Reduce for permutation tests of massive genetic analysis of complex traits. Submitted to IEEE/ACM Transactions on Computational Biology and Bioinformatics.

Carl Nettelblad, Behrang Mahjani, Sverker Holmgren. Fast and accurate detection of multiple quantitative trait loci. *Journal of Computational Biology*, volume 20, pp 687-702, 2013.

A. Eriksson, B. Mahjani, B. Mehlig. Sequential Markov coalescent algorithms for population models with demographic structure. *Theoretical Population Biology*, Volume 76, Issue 2, Pages 84-91, September 2009.

Conference Publications

Behrang Mahjani. Map-Reduce programming model for QTL applications. *Winter school in Big data challenges to modern statistics, Geilo, Norway, Jan 2014*, Poster.

Carl Nettelblad, Behrang Mahjani, Sverker Holmgren. Using peak shape to improve efficient and effective detection of multiple QTL in known crossings. In: *4th International Conference in Quantitative Genetics, June 2012, Scotland, UK*, Poster.

Ghassem Mahjani, Behrang Mahjani. Anticipation. In: *European conference on complex systems 2009*, Poster.

Ghassem Mahjani, Abouzar Massoudi, Behrang Mahjani. The complex mindset. In: *European conference on complex systems 2007*, Poster.

Related training	1st Summer Institute in Statistics for Big Data July 2015, University of Washington, Department of Biostatistics, (Supervised methods for statistical machine learning), distance.
	20th Summer Institute in Statistical Genetics, University of Washington, Department of Biostatistics, July 2015 (QTL mapping, Advanced Quantitative Genetics), distance.
	International Winter School on Big Data Tarragona, Spain, Jan 2015.
	Winter school in Big data challenges to modern statistics, Geilo, Norway, Jan 2014.
	Second Thematic School on New Trends in Mathematics of Complex Systems, Institut des Systèmes Complexes Paris Ile-de-France (ISC-PIF), March 2008.
	Data Science Specialization, Johns Hopkins University, Bloomberg school of Public Health, via Coursera, 10 courses (in progress).
	Genomic Data Science Specialization, Johns Hopkins University, Bloomberg school of Public Health, via Coursera, 8 courses (in progress).
Related talks	Statistical Computing with focus in genetics, PhD Student Circus 2015, IT department, Uppsala University.
	Detection of Multiple QTL in Known Crossings, Talk, ReiDok13, Symposium on Computational PhD Projects, University of Iceland, April 2013.
	Fast and Accurate Detection of Multiple QTL in Know Crossing, Behrang Mahjani, 4th Swedish Meeting on Mathematics in Biology 11-12 December.
Grants	Travel grant from Wallenberg foundation, 2015
	Travel grant from Anna Maria Lundin foundation, 2014
	Travel grant from Anna Maria Lundin foundation, 2013
Memberships	American Mathematical society (Since 2007)
	American Statistical Association (Since 2008)
	Society for Industrial and Applied Mathematics (Since 2014)
Courses at PhD level	Applied multivariate analysis, Matrix Computations in Statistics, Linear mixed models, Advanced numerical linear algebra with applications in data analysis
	Evolutionary Quantitative Genetics, Next Generation Bioinformatics Tools
	Parallel Algorithms for Scientific Computing, Large data sets for scientific applications, Programming of Parallel Computers
	Functional analysis, Writing in the sciences, Nonlinear Multi-objective Optimization, Numerical Linear Algebra, Numerical methods for ODEs and PDEs
	Supervising Undergraduate Students, Academic Teacher Training.
Hobbies	Photography, Playing Piano and Guitar, Cooking, Hiking.