

Kai Kang | Data Scientist

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Research Interests

- Bayesian Nonlinear Filtering and Estimation for Spatio-Temporal Processes.
- Sequential Monte Carlo Methods for Rare Event.
- Data Sciences & Machine Learning.

Education

The University of Tennessee <i>Ph.D in Mathematics with Double Minors in Computer Science and Statistics</i>	Knoxville 2012–2016
Dissertation: <i>Bayesian Nonlinear filters for rare events.</i>	
The University of Tennessee <i>Master of Science in Mathematics</i>	Knoxville 2009–2012
Thesis: <i>A Second-Order Accurate Energy Stable Scheme for the Cahn-Hilliard-Hele-Shaw System of Equations: Application to Tumor Growth</i>	
Northeastern University <i>Bachelor of Science in Applied Mathematics</i>	China 2002–2006

Project

- Finite mixture models estimation for large-scale Neutron Data
- Comparison and Classification of Genomes Based on Decomposed Sets of K-mers (Hadoop Mapreduce)
- Latent Twitter Topic Modeling with Latent Dirichlet Allocation. (Hadoop Mapreduce)

Experience

Research	
Oak Ridge National Laboratory (ORNL) <i>Research Intern at Computational and Applied Mathematics Group</i> Develop statistical methods for analyzing large-scale neutron data	Oak Ridge Summer–2015
Funded by AFOSR and Simons Foundation <i>Research Assistant on the topics of sequential Monte Carlo methods</i> Detailed achievements: <ul style="list-style-type: none">○ Develop algorithms for multi-target tracking problem○ Develop Sequential Monte Carlo methods for rare events	Knoxville 2015–2016
Teaching	
The University of Tennessee <i>Graduate Teaching Assistant/Associate</i> Instructor of College Algebra, Calculus, Statistics with full responsibility.	Knoxville 2009–present
Vocational	
Neusoft Group <i>Programmer</i> Business Applications Development.	China 2006–2008

Honors and Awards

Summer 2015: ORNL Advanced Short Term Research Opportunity Research internship

2012–2016: Science Alliance Fellowship, The University of Tennessee

2015: Graduate Student Senate Travel Awards

2014: Accommodation Grant, IEEE 17th International Conference on Information Fusion

2014-2015: Graduate Students Travel Grant, Math Department, The University of Tennessee

2006: Excellent project team, Neusoft Group

2006: The title of outstanding new staffs, Neusoft Group

2004: Scholarships to outstanding undergraduate students

2002: Scholarships to outstanding new undergraduate students

Publications

2013: K. Kang, V. Maroulas, "*Drift Homotopy Methods for a non-Gaussian Filter*", in IEEE Information Fusion, 16th International Conference

2014: K. Kang, V. Maroulas, I.D. Schizas, "*Drift homotopy particle filter for non-Gaussian multi-target tracking*", in IEEE Information Fusion, 17th International Conference

2015: V. Maroulas, K. Kang, I.D. Schizas, M.W. Berry, "*A learning drift homotopy particle filter*", in IEEE Information Fusion, 18th International Conference

2015: K. Kang, V. Maroulas, I. Schizas, F. Bao "*Drift homotopy and likelihood bridging particle filter*", in preparation.

Presentations

2015: IMS-China International Conference on Statistics and Probability, Kunming, China

2015: 45th Annual John H. Barrett Memorial Lectures, University of Tennessee

2014: 17th International Conference on Information Fusion, Salamanca, Spain

2014: Stochastic Seminar, The University of Tennessee, Knoxville

2014: Computational and Data Science Seminar, The University of Tennessee, Knoxville

List of Graduate Courses

Mathematics: Bayesian Data Analysis, Mathematical Probability, Statistical Inference, Numerical Analysis, Optimization, Real/Complex Analysis, Functional Analysis, Optimal Control

Machine Learning: Data Mining in Business Analytics, Multivariate & Data Mining Techniques

Computer Science: Big Data Mining (MapReduce Hadoop), Advanced Algorithm, Operating System, System Programming, Database System, Fundamental Algorithms, Data Structure

Computer skills

Programming Languages: Python, SQL, c/c++, R, Perl, PHP, Javascript

Databases & Softwares: Matlab, MySQL, Vim, SAS, Microsoft Office, L^AT_EX

Languages

○ English

○ Chinese