Ramanuja Simha

Researcher, Computational Biology

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Research background lies in computational biology, bioinformatics, data mining, and graph algorithms.

Education

2011–2016 **University of Delaware**, *Ph.D.*, Computer Science, *GPA:3.97/4.*
A probabilistic framework for protein multi-location prediction, and its applicability to multi-label classification.

2008–2011 **University of South Florida)**, *M.S.*, Computer Science, *GPA:4/4.*

2001–2005 **The National Institute of Engineering**, *B.E.*, Information Science, *75/100.*

Experience

2021 **Research Associate**, *Indian Institute of Science*, Bangalore, KA.
Developing compression tools for genomic data using high performance software.

2019 **Postdoctoral Researcher**, *Oak Ridge National Laboratory*, Oak Ridge, TN.
Developed explainable systems using iterative random forests and random intersection trees to identify genomic and climatic variables responsible for tree adaptation.

2018 **Research Scientist**, *Adobe Research*, Bengaluru, KA.
Developed artificial intelligence methods for process scheduling.
- Schedule.AI: Application Performance Orchestration on Platform. US Patent P8315, 2018.

2016–2017 **Postdoctoral Fellow**, *University Health Network*, Toronto, CA.
Developed statistical pipelines for biomedical research.

2011–2016 **Graduate Fellow and Research Assistant**, *University of Delaware*, Newark, DE.
Developed probabilistic graphical models for protein multi-location predictions and multi-label classification.

2015 **R&D Intern**, *GE Global Research*, Niskayuna, NY.
Developed computational methods for stratification of cancer patients using genomics and transcriptomics data.

2014 **Applied Data Mining Intern**, *LinkedIn*, Mountain View, CA.
Developed machine learning approaches for ranking startup companies.

2008–2011 **Research Assistant**, *University of South Florida*, Tampa, FL.
Developed graph algorithmic techniques for data mining and network analysis.

2010 **Parallel Computational Science Intern**, *National Center for Atmospheric Research*, Boulder, CO.
Developed a software performance prediction tool for HPC systems.

2005–2008 **Senior Software Engineer**, *Tesco HSC*, Bengaluru, KA.
Developed integration pipelines for data intensive retail applications.

Other positions

2012 **ML Summer School Student**, *University of California at Santa Cruz*, Santa Cruz, CA.
Kernel methods and graphical models.

2011 **Visiting PhD Student**, *Carnegie Mellon University*, Pittsburgh, PA.
Developed methods for protein location prediction using images.

Honors and Awards

2016 Travel Award, European Association for Artificial Intelligence

2015 Travel Award, Society for Laboratory Automation and Screening

2013–2015 Graduate Fellowship, University of Delaware

2012 Scholarship, Machine Learning Summer School

2012 Scholarship, Machine Learning Summer School

2011 Travel Award, High Performance Distributed Computing

2011 Best Student Poster Award, HPDC/SIGMETRICS

Computer Skills

Programming	Python, R, C++, SQL
Software	Keras, numpy, scikit-learn, SWIG, scipy, NLTK, Weka, LATEX
Machine Learning	Multi-label Classification, Bayesian Networks, Deep Learning, Auto-Encoding, Expectation Maximization (EM), Nonnegative Matrix Factorization (NMF), Gibbs Sampling
Data Mining	Graph Algorithms, PageRank, Association Mining, Social Network Analysis, Distributed Computing
Operating Systems	Ubuntu/Linux, Microsoft Windows

Publications (Google Scholar)

Refereed Journals

13. Protein (Multi-)Location Prediction: Utilizing Interdependencies via a Generative Model. **Ramanuja Simha**, Sebastian Briesemeister, Oliver Kohlbacher, and Hagit Shatkay. Bioinformatics 31(12), 2015.
12. Protein (Multi-)Location Prediction: Using Location Inter-Dependencies in a Probabilistic Framework. **Ramanuja Simha** and Hagit Shatkay. Algorithms for Molecular Biology 9(1), 2014.
11. Determining the Subcellular Location of New Proteins from Microscope Images Using Local Features. Luis Coelho, Joshua Kangas, Armaghan Naik, Elvira Osuna-Highley, Estelle Glory Afshar, Margaret Fuhrman, **Ramanuja Simha**, Peter Berget, Jonathan Jarvik, and Robert Murphy. Bioinformatics 29(18), 2013.
10. Identifying High Betweenness Centrality Nodes in Large Social Networks. Nicolas Kourtellis, Tharaka Alahakoon, **Ramanuja Simha**, Adriana Iamnitchi, and Rahul Tripathi. Social Network Analysis and Mining 3(4), 2013.

Refereed Conferences

9. Learning to Place Applications in a Shared Cluster. Subrata Mitra, Shanka Subhra Mondal, Nikhil Sheoran, Neeraj Dhake, Ravinder Nehra, and **Ramanuja Simha**. ACM SIGOPS Asia-Pacific Workshop on Systems (APSys), August 2019.
8. Improved Multi-Label Classification Using Label Inter-dependencies Via A Generative Mixture Model. **Ramanuja Simha** and Hagit Shatkay. European Conference on Artificial Intelligence (ECAI), August 2016.
7. Protein (Multi-)Location Prediction: Utilizing Interdependencies via a Generative Model. **Ramanuja Simha**, Sebastian Briesemeister, Oliver Kohlbacher, and Hagit Shatkay. International Conference on Intelligent Systems for Molecular Biology (ISMB), July 2015.
6. Protein (Multi-)Location Prediction: Using Bayesian Networks for Location Inter-dependencies, and a Mixture Model. **Ramanuja Simha** and Hagit Shatkay. International Conference and Exhibition of the Society for Laboratory Automation and Screening (SLAS), February 2015.
5. Protein (Multi-)Location Prediction: Using Location Inter-Dependencies in a Probabilistic Framework. **Ramanuja Simha** and Hagit Shatkay. International Workshop on Algorithms for Bioinformatics (WABI), September 2013.
4. Mining Associations Using Directed Hypergraphs. **Ramanuja Simha**, Rahul Tripathi, and Mayur Thakur. International Workshop on Graph Data Management: Techniques and Applications at the International Conference on Data Engineering (ICDE), April 2012.
3. Branded with a Scarlet C: Cheaters in a Gaming Social Network. Jeremy Blackburn, **Ramanuja Simha**, Nicolas Kourtellis, Xiang Zuo, Matei Ripeanu, John Skvoretz, and Adriana Iamnitchi. International World Wide Web Conference (WWW), April 2012.
2. Cheaters in a Gaming Metanetwork. Jeremy Blackburn, **Ramanuja Simha**, Clayton Long, Xiang Zuo, John Skvoretz, and Adriana Iamnitchi. HPDC / SIGMETRICS Student Posters, June 2011.
1. K-Path Centrality: A New Centrality Measure in Social Networks. Tharaka Alahakoon, Rahul Tripathi, Nicolas Kourtellis, **Ramanuja Simha**, and Adriana Iamnitchi. Workshop on Social Network Systems (SNS), April 2011.