

Rahul, Ph.D.

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Summary

I am Ph.D. in *Applied Mathematics* from the *Department of Applied Mathematics at the University of Waterloo, Canada*. I have 8+ years of combined research and industry experience in the predictive model building, high performance scientific computing, and data analytics. Additionally, I have taught graduate-level mathematics courses at the University of Waterloo.

Education

Doctor of Philosophy <i>Department of Applied Mathematics, University of Waterloo, Canada</i>	2012
Certificate in University Teaching <i>Center of Teaching Excellence, University of Waterloo, Canada</i>	2011
Master of Technology <i>School of Computational and Integrative Sciences, Jawaharlal Nehru University, India</i>	2008
Master of Science <i>Department of Electronic Sciences, University of Delhi South Campus, India</i>	2005
Bachelor of Science <i>Electronic Sciences, Sri. Aurobindo College, University of Delhi, India</i>	2003

Experience

Data Science Associate <i>Blackrock Services India Pvt.Ltd, Gurgaon, India</i> Role Description: I am applying machine learning and artificial intelligence to create new investment insights. Before, I was part of consultancy team where I used data science techniques to advice on the client problems.	Sep, 2015 - present
Research Scientist <i>Data Science Practice, Impetus Infotech Pvt. Ltd., Noida, India</i> Role Description: I was responsible for developing predictive models for clients to improve their business outcomes. Also, I was responsible for training and development of team members.	Jan, 2015 - Aug, 2015
Postdoctoral Research Fellow (Research Scientist) <i>Department of Biochemistry, McGill University, Montreal, Canada</i> Role Description: I was responsible for developing model for the breast cancer using distributed computing and convex optimization methods.	Feb, 2014 - Dec, 2014
Sessional Lecturer <i>Department of Applied Mathematics, University of Waterloo, Waterloo, Canada</i>	Sep, 2012 - Dec, 2013
Graduate Teaching Assistant <i>Department of Applied Mathematics, University of Waterloo, Waterloo, Canada</i>	2008 - 2012

Technical and Personal skills

Programming Languages: Proficient in: Python, MATLAB, R, \LaTeX , Octave
Also ability with: C, JavaScript, Fortran 77, Shell Scripting, Julia, pySpark
Literate Programming Tools: R Shiny Apps, R Knitr, IPython, Markdown, linter, Make (Build Tool)
Visualization Tools: ggplot2, ggvis, leafletR, Circos, Inkscape, Xfig, dimple.js, Bokeh
Version Control Tools: Git, SVN, SourceTree, Sumatra (Provenance Tool)
Platforms: Windows, Linux, Scientific Computation using MapReduce Programming Paradigm
Educational Tools: Clickers an audience response system, Open-Sankore an interactive whiteboard software
General Business Skills: Good verbal and written communication skills, ability to work in multicultural environment, enjoys working in multidisciplinary team, can work independently, good in mentoring and team building skills
Project Management Tools: Jira, Confluence

Selected Projects

R package *expdata*

Tools: R, R Shiny, Source Code: <https://github.com/r2raahul/expdata>

Independent Project

Description: A light weight exploratory data analysis tool using data.table in R.

A Dashboard to Visualize Change in Financial Terms at Two Time Points

Tools: R, R FlexDashboard

BlackRock

Description: A dashboard to visualize difference in financial metrics at two different time points.

Finding Residential Mortgage Cohorts for the efficient Downstream Analysis of Cash Flow

Tools: Python, R, PySpark

BlackRock

Description: The goal was to create cohorts of the loan, which share similar characteristics. We utilised K-Means Clustering and Principal Component Analysis (PCA) to create loan cohorts.

Real time Recommender System using Singular Value Decomposition (SVD)

Tools: R, Shiny App, (1) Source Code: <https://github.com/r2raahul/fastSVDrevisions>

Impetus

Description: The aim was to build a real-time recommendation system based on the web browsing history. Next, we implemented the Brand, M (1) algorithm to build a recommendation system. Finally, we built an R shiny Application to showcase the recommendation system.

Modeling Risk due to Natural Catastrophes for the Insurance Premium Estimation

Tools: Python, Cython

Impetus

Description: The objective was to validate the risk model built on the MapReduce programming paradigm. I improved the model using high precision numeric algorithms, converting codes into Cython, and removing redundancy in the algorithm.

Building a Co-Expression Network of Proteins and Identification of Functional Hub Proteins

Tools: R, R igraph, Circos

University of Waterloo

Description: The aim was to build a co-expression network using sparse data and identify hub proteins. We used Sparse Partial Correlation Estimation (SPACE) method to build the network. Finally, we identified the hub proteins using degree centrality. Source Code: <https://bitbucket.org/r2raahul/sparsecorrelation>

Modeling Metabolic Reprogramming in Cancer Cells using Convex Optimization Methods

Tools: R, R Bioconductor, MATLAB

McGill University

Description: The goal was to build a model to study the combined effects of gene expression and metabolic changes in the cancer cells. The model is formulated as the convex optimisation problem and we used parallel computing to solve the problem.

Additional Training and Certifications

Selected Massive Open Online Course Certifications.....

Social and Economic Networks: Models and Analysis

November, 2015

Coursera

Scalable Machine Learning (Apache Spark)

August, 2015

edX

Linear and Integer Programming

December, 2014

Coursera

Statistical Learning

April, 2014

Stanford Online

Additional Training.....

Participated in High Performance Computing Workshop Series

2014

McGill University

Certificate in MATLAB

August, 2005

IIT Kanpur


Certificate in Japanese


December, 2004

Reiyukai

Additional Information

 Link of Complete Academic CV: <http://tinyurl.com/nddsne>

 Teaching Samples: <http://tinyurl.com/ppxobvd>

 GitHub Account: <https://github.com/r2raahul>

Selected Visualization using dimple.js: <http://bl.ocks.org/r2raahul>