

ARMAN AKBARIAN

SUMMARY

Experienced in machine learning and statistical modelling. Strong quantitative background with 6+ years of experience in implementing numerical algorithms and simulations.

CONTACT

🌐 www.akbarian.org **in** armanakbarian
📍 Vancouver, CANADA **📧** rmanak

EDUCATION

University of British Columbia
PhD Computational Physics 2015

SKILLS

STATISTICAL / ML / MODELING:: hypothesis testing, statistical inference, forecasting & predictive analytics, regression methods, classification, clustering, recommendation systems, text mining, MC simulations
PROGRAMMING & TOOLS:: Python, R, SQL, C/C++, Matlab, shell scripting (Perl/bash), MPI/OpenACC, Hadoop/MapReduce, AWS, git, Scikit-Learn

PROJECTS

Product Search Relevance (top 3.5% algorithm among 2K+ teams)

A machine learning pipeline to score the relevance of customers' search queries to the products. (Python)

- https://github.com/rmanak/search_relevance

Stores Sale Forecasting

A time series analysis and forecasting tool (Python & R Code, RMSE: ~ 0.11 for over 1000+ stores).

- https://github.com/rmanak/store_sale

FD: Finite Difference Simulations Toolkit

A high-level programming language to pose, test and solve complex sets of PDEs using finite difference techniques on computer clusters (C, Maple and FORTRAN Code, with MPI interface for parallelization).

- <http://rmanak.github.io/FD/>

AWARDS

Gold Medal · International Physics Olympiad	2003
FYF Doctoral Fellowship · UBC	2010
Faculty of Science Award · UBC	2009
Physics Distinguished Grad. Scholarship · UBC	2008

EXPERIENCE

Data Science | Machine Learning Engineer
Freelance

Vancouver, CA · Aug 2015 to Current

- **NLP & Text Mining:** Analyzed 200K+ documents (product description) and built a machine learning pipeline to score the relevance of customers' search queries to the products. Using several NLP and text mining techniques combined with gradient boosted regression trees and ensembling, achieved a far better accuracy (60% improvement in RMSE toward the top benchmark, i.e. human rating of relevance) than standard techniques in text relevance—tf-idf algorithm for instance.
- **Time Series Analysis, Forecasting & Consumer Behaviour:** Analyzed sale history of 1K+ stores and built a regression model (GAM with local regression) combined with a boosted decision tree to predict sale across stores based on several factors including time trends, promotion, competition, etc. (Python & R Code, RMSE: ~ 0.11)
- **Predictive Analytics:** Using a gradient boosting decision tree, ensembling methods and 260K+ customers' previous data, built a classifier with ~ 97% accuracy (ROC) to predict which customer will purchase the insurance quote from a noisy unstructured data (R Code)

R&D (Numerical Simulations & Analytics)

UBC / Numerical Relativity Group

Vancouver, CA · 2008 to 2015

- Established the first successful numerical method for critical phenomena by solving the Einstein's GR system in a fully evolutionary scheme. The method extends the research in numerical relativity toward new discoveries.
- Developed parallel and optimized codes to speed-up computations by factors of 100-1000x.
- Analyzed scientific results using statistical methods and visualization tools. Collaborated in presentation and publication of results in peer-reviewed journals (2 American Physics Society, Phys. Rev. D. publications).

CAP Associate / Teaching Assistant

Canadian Association of Physics / UBC

Vancouver, CA · 2010 to 2014

- Designed exams and evaluated results for CAP's national physics olympiad.
- Mentored students, and improved their problem solving skills for the international competition.

Member of Scientific Committee

International Physics Olympiad

Isfahan, IR · 2006 to 2007

- Collaborated in designing theoretical and experimental exams for the 38th International Physics Olympiad.