ARMAN AKBARIAN

SUMMARY

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

CONTACT

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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)

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

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).

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.