JINGHE ZHANG

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Olsson 227C ⋄ 151 Engineer's Way
Charlottesville, VA

EDUCATION

University of Virginia *08/2013 - Present*
Doctor of Philosophy, Systems & Information Engineering *Charlottesville, VA*

Concentration: Data Mining, Machine Learning, Predictive Modeling, Recommender Systems, Health Informatics
Overall GPA: 3.91/4.0

Binghamton University, State University of New York *08/2011 - 05/2013*
Master of Science, Industrial & Systems Engineering *Binghamton, NY*

Overall GPA: 3.76/4.0
Thesis: Predictive Modeling of Hospital Readmissions Using Metaheuristics and Data Mining

Hebei University of Technology *09/2007 - 06/2011*
Bachelor of Science, Industrial Engineering *Tianjin, China*

Overall GPA: 3.65/4.0

EXPERIENCE

Graduate Research Assistant *08/2013 - Present*
Department of Systems and Information Engineering, University of Virginia *Charlottesville, VA*

Patient Retrieval using Electronic Health Data *09/2014 - Present*

- Developed a set of similarity measures to discover the similarity between patients using electronic health data
- Evaluated the proposed similarity measures with their applications, similarity-based classification to distinguish anxiety/depression patients from other patients with an improved sensitivity and precision, compared with those based on popular similarity metrics, such as cosine similarity and Jaccard similarity

Care Variation among Congestive Heart Failure Patients *09/2013 - 09/2014*

- Applied vector space models to measure the similarities between congestive heart failure patients based on their medication orders
- Utilized clustering methods (K-means and co-clustering using bipartite graph) to detect patient subgroups within the congestive heart failure population according to medication orders, diagnostic and demographic information
- Implemented the above models using Spark on Hadoop clusters with significantly decreased computation time

Text Mining on Restaurant Reviews from Yelp *03/2015 - 04/2015*

- Preprocessed 1 million restaurant reviews crawled from Yelp with tokenization, stemming, stop word removal, and normalization, to construct N-gram vector space representation for text documents and computed similarity among different documents
- Implemented statistical language models with maximum likelihood estimation and smoothing; generated text documents from language models and evaluated the constructed N-gram language models
- Developed a text categorization system, including feature selection, Nave Bayes and KNN classifier, to distinguish positive and negative restaurant reviews
- Evaluated the text categorization system with 10-fold cross-validation and performed parameter tuning to explore the best configuration of KNN with brute force and random vector projection

Designing of Spam Filter Using Machine Learning Approaches *09/2013 - 11/2013*

- Constructed static models using generalized linear regression based on principle component analysis and log transformation on the explanatory variables
- Modeled the trend, seasonality, and random fluctuation for spam and ham using time series data
- Combined the static and time series models using Bayes rule to further improve the performance of the spam filter

Web Crawler and Document Analysis & Retrieval *09/2014 - 11/2014*

- Programmed a web crawler for a medical forum in Java and extracted all posts in every threaded discussion about some particular topics, such as Diet, Hypertension, etc.
- Generated a document analyzer to tokenize, normalize, and stem the crawled documents, identified the most frequent words to compare with the standard stop words, and validated the Zipfs law
- Built an information retrieval system to retrieve similar documents of the input queries based on vector space model and popular language models, such as BM25

Graduate Teaching Assistant *01/2014 - 05/2014*
SYS6016 Machine Learning, University of Virginia *Charlottesville, VA*

- Gave a lecture on artificial neural networks, held office hours, and graded assignment and exams

Graduate Research Assistant *08/2011 - 05/2013*
Watson Institute for Systems Excellence, Binghamton University
Continuous Process Improvement in Healthcare,
Quality Management Department, United Health Services (UHS) *Binghamton, NY*

Creative Scheduling in Cardiac Catheterization Lab

- Analyzed case-level data and identified root causes for low utilization and volume variation
- Identified patient arrival pattern and predicted resources required using queuing theory

Prevention of Hospital Readmission

- Collected clinical and demographic data related to patient characteristics and diagnosis and identified significant risk factors in readmission using statistical analysis
- Accomplished prediction models using Nave Bayes, particle swarm intelligence-based support vector machine (SVM), and ensemble neural networks, and improved average classification accuracy by 22% to assist clinicians in identifying high-risk patients

PEER-REVIEWED PUBLICATIONS

Zheng, B, Zhang, J., Yoon, S.W., Lam, S., Khasawneh, M.T., Poranki, S. Predictive modeling of hospital readmissions using metaheuristics and data mining. Expert Systems With Applications

Saha, C., Zhang, J., Yoon, S.W., Khasawneh, M.T., and Srihari, K. (2012). Selection and Matching of Kidney Donor and Recipient Using Fuzzy Techniques and Analytic Hierarchy Process. Proceedings of Industrial and Systems Engineering Research Conference (ISERC). May 18-22. Orlando, FL.

Zhang, J., Lam, S., and Poranki, S. (2013). A Classification Model for Hospital Readmission Using Combined Neural Networks. Proceedings of Industrial and Systems Engineering Research Conference (ISERC). May 18-22. San Juan, PR.

Zhang, J., Yoon, S.W., Khasawneh, M.T., Poranki, S. and Srihari, K. (2013). A Readmission Prediction Model Using Swarm Intelligence-based Support Vector Machine. Proceedings of Industrial and Systems Engineering Research Conference (ISERC). May 18-22. San Juan, PR.

HONORS & AWARDS

National Aspiration Scholarship, Ministry of Education of the Peoples Republic of China, 2009

Commonwealth Fellowship, University of Virginia, 2013-2014

Graduate Research Scholarship, University of Virginia, 2014-2015

PROFESSIONAL AFFILIATIONS

Institute of Industrial Engineering (IIE)

Alpha Pi Mu Industrial Engineering Honor Society

TECHNICAL STRENGTHS

Programming	Python, Java, R, Matlab, SQL, HTML, CSS, JavaScript, Hadoop, Spark
Operating Systems	Windows, Unix/Linux
Tools	Latex, Git, SVN, Vim, Emacs, Arena, Simio, ExpertFit, Minitab, NetLogo
Certificates	Lean Six Sigma Green and Black Belt from Dartmouth College
Languages	English and Chinese