**Abouzar Rahmati**

**Summary**

* 15+ years of experience in Computer Science and Electrical Engineering, Programming, Data Mining, Automated Algorithms to process big behavioral datasets generated in the laboratory (using Matlab), and the internet (using Qualtrics, Red Hat, Limesurvey, Amazon Mechanical Turk, PHP, CSS, and Microsoft Access), and Machine Learning (Classification Algorithms like Logistic Regression, K-NN, SVM, Kerne, SVM, Naive Bayes, Decision Tree & Random Forest classification).
* Experience in data analytics and developing predictive modeling algorithms using machine learning and data analytics and performing statistical analysis
* Experience in implementing predictive analytics solutions Implementation and productization of predictive risk models developed using R and Python
* Strong broad knowledge and experience in Mathematical (Matrix Operations, Probability, Geometry, Statistics, Linear Algebra, Numbers Theory, Differential Equations, Engineering Mathematics, and Mathematics Analysis), statistical analysis, predictive analytics, optimization and Signal Processing
* Predictive modeling in structured and unstructured data environment
* 8 years of research experience in optimization algorithm, data analysis and signal processing
* Expertise in leveraging the Exploratory Data Analysis with all numerical computations and by plotting all kind of relevant visualizations to do feature engineering and to get feature importance
* Actively involved in all phases of data science project life cycle including Data Extraction, Data Cleaning, Data Visualization and building Models
* Expert in Analytical Software/Tools such as: Python, Spark, SQL, Scala, R, SAS
* Experience with Big Data technologies like Hadoop, Spark, Hive, NoSQL, etc., and Cloud technologies (AWS, Azure, etc.)
* Experienced in Machine Learning Regression Algorithms like Simple, Multiple, Polynomial, SVR (Support Vector Regression), Decision Tree Regression, and Random Forest Regression
* Strong expertise in Business and Data Analysis, Data Profiling, Data Migration, Data Conversion, Data Quality, Data Governance, Data Lineage, Data Integration, Master Data Management (MDM), Metadata Management Services, Reference Data Management (RDM)
* Experienced in Artificial Neural Networks (ANN) and Deep Learning models using Theano, Tensor flow and keras packages using Python
* Wavelet, Digital Furrier Transform, Fuzzy Logic, MATLAB Scripts, C++, C#, PSCAD, Pascal, SKM, SQL,
* Project management including financial reporting, project scheduling, resource assignments, and report development
* Management and Leadership regarding the modeling, design, and engineering construction systems
* Design, develop and direct research programs. Preparation of grant proposals, internal reports and publications. Evaluation and consulting on research proposals of others.

**Educations:**

* P.H.D in Electrical and Computer Science from University of Alabama in Huntsville, 2014
* M.SC.in EE, Computer Science from University of Alabama in Huntsville, 2012
* M. Sc. in EE, Electrical and Computer Engineering from University of Tehran, 2006
* B. Sc.in EE, Electrical and Computer Engineering, Power & Water Institute of Technology, PWIT, 2004

**Professional Experiences:**

**ABM Industry, Baltimore, MD 2/2017- Present**

**Technical Scientist Consultant**

**Responsibilities:**

* Responsible for data exploration, cleaning for modeling, participate in model development.
* Used Principal Component Analysis and factor Analysis to analyze high dimensional data in python.
* Performed data cleaning, featurization, feature engineering and feature scaling.
* Visualize, interpret, report findings, and develop strategic by python libraries (NumPy, Pandas, SciPy, and Scikit-Learn).
* Data mining using the state-of-the-art methods and dimensionality reduction using Principal Component Analysis for visualizing high dimensional data.
* Worked on customer segmentation using unsupervised clustering techniques. Performed data wrangling to clean, transform and reshape the data utilizing panda’s library. Analyzed data using SQL, R, Scala, Python, Apache Spark and presented analytical reports to management and technical teams.
* Implemented batch and real-time model scoring to drive actions. Developed proprietary machine learning algorithms to build customized solutions that go beyond standard industry tools and lead to innovative solutions.
* Customer Segmentation/Clustering (latent class/profile analysis) of mixed-type data (combinations of continuous and categorical data), including conjoint parts-worth data, using a variety of machine learning techniques in R and Python.
* Management the Operations, Facility (FM), Sales, Team Building, and Operating Budgets.
* Support the organization in developing projects
* Create effective tools to help evaluate the cost of interconnection facilities and help selecting the best interconnection scenarios in both prospecting and bidding stages

**SunEdison, Belmont, CA. 5/2014 - 2/2017**

**Electrical/Data Scientist**

**Responsibilities:**

* Manage several projects planning/deliverables across Advanced Analytics, Big Data and Digital Analytics streams.
* Project Consultant for industrial clients across globe in their digital transformation journey.
* Resource hiring (Lateral & Campus), compensation fitting, training, coaching and performance review across different analytical streams.
* Provide support in solution development for Data science, Advanced Analytics and Digital Analytics Projects.
* Guide team on data scientists, to develop statistical models and algorithms to answer complex business problems
* Implement machine learning techniques and interpret statistical results which are ready- consumption for senior management and clients.
* Implemented machine learning algorithms like Logistic Regression, SoftMax Classifier, Random Forest, Decision Trees.
* Used Principal Component Analysis and engineering factor Analysis to analyze high dimensional data in python.
* Performed data cleaning, featurization, feature engineering and feature scaling.
* Supervised data collection and reporting. Ensured relevant data is collected at designated stages, entered into appropriate databases and reported appropriately.
* Collaborated with Data engineers and operation team to implement ETL process, wrote and optimized SQL queries to perform data extraction to fit the analytical requirements.
* Built models using Statistical techniques like Bayesian HMM and Machine Learning classification models like XGBoost, SVM, and Random Forest.

**Is International, Atlanta, GA 2/2012- 4/2014**

**Scientist Consultant**

**Responsibilities:**

* Mathematical modeling of behavior (used both traditional and Bayesian statistics to assess whether the behavior of rodent subjects suggested anticipation for future events).
* Analyze, define and develop data integration, data curation to support data analytics business requirements.
* Manipulate complex, high-volume, high-dimensionality data from varying sources to provide insights into enhancing Optoro's Smart Disposition algorithm and pricing algorithms.
* Monitor results of deployed algorithms for accuracy, drift over time, and robustness to new data.
* Produce reports and data visualizations using Tableau.
* Design, implement, test, and document statistical computer programming in high level statistical software packages, including SAS and R.
* Designing and building algorithms and predictive models using techniques such as linear and logistic regression, support vector machines, ensemble models (random forest and/or gradient boosted trees), neural networks, and clustering techniques.

**University of Ilam 6/2006 - 7/2009**

**Professor-Faculty Member**

**Responsibilities:**

* Advisor: extensively trained 11 undergraduate researcher volunteers to successfully perform laboratory duties.
* Teaching: was the instructor of courses “Programming Language C++”, “Mathematical Engineering”, “Numerical Analysis”, and “Machine Learning” for junior/senior undergraduate students (received excellent teaching evaluations).
* Team management: Oversaw the daily operations of six different research assistants as they guided participants through 4-8 different experimental protocols.
* Extensive research and analysis in Computer Science and Electrical Engineering.

**Mahan-Rahavard 3/2004 - 6/2006**

**Electrical Engineer**

**Responsibilities:**

* Design and develop complex models and simulations of systems and conduct independent studies and research encompassing sophisticated analytical techniques and novel approaches.
* Provide substation project management support, including managing engineering scope according to technical contracts, equipment procurement, developing change orders, and maintaining project schedules.
* Design substation conduit plan and detailed design.
* Working with various design calculation like grounding & shielding, rigid bus calculation, battery & charger sizing, AC & DC auxiliary system, voltage drop calculation, sag & tension calculation, input for substation tower & equipment support structure design.
* Serve as consultant to management and customers regarding advanced technical studies, their potential application and the resolution of complex problems.

**Publications:**

**Journal Papers:**

* Rahmati, “Accurate Real-Time Measurements of the Smart Grid Phasor Measurement Unit Parameters”, Electric Power Components and Systems, Volume 44, Issue 16, Sep. 2016.
* Rahmati and R. Adhami, “Real-Time Electrical Variables Estimation Based on Recursive Wavelet Transform,” International Journal of Electrical Power & Energy Systems, Vol. 68, Pages 170-179, June 2015.
* Rahmati and M. Sanaye-Pasand, “Protection of Power Transformers using Multi Criteria Decision-Making,” International Journal of Electrical Power & Energy Systems, Volume 68, Pages 294-303, June 2015.
* A. Rahmati and R. Adhami, “An Accurate Filtering Technique to Mitigate Transient Decaying DC Offset,” IEEE Transactions on Power Delivery, Volume 29 , Issue: 2, April 2014.
* A. Rahmati and M. Sanaye-pasand, ”A Fast Wavelet Transform Based Algorithm to Distinguish between Transformer Internal Faults and Inrush Currents,” European Transactions on Electrical Power, Volume 22, Issue 4, Pages 471–490, May 2012.
* A. Rahmati, D. Bumblauskas, M. Dimassi, R. Adhami, “An Overcurrent Protection Relay Based on Local Measurements,” IEEE Transactions on Industry Applications, Vol. 51 , Issue 3, Pages 2081-2085, June 2015.
* A. Rahmati, “A Fault Detection and Classification Technique Based on Sequential Components,” IEEE Transactions on Industry Applications, Volume 50, Issue 6, Pages 4202-4209, Nov. 2014.
* A. Rahmati and M. Sanaye-pasand, “A Novel Wavelet Based Method for Improvement of Power Transformer Differential Relay against Magnetizing Inrush current and CT Saturation,” Iranian Journal of Electrical and Computer Engineering, IJECE, Volume 7, Issue 2, Pages 136-144, July 2009.
* A. Rahmati, “Study and Simulation of the Unified Power Flow Controller (UPFC) in Power Systems,” PWUT Nab Transaction, Volume 11, Issue 4, Pages 34-41, Nov. 2005.
* Conference Papers:
* A. Rahmati, “A novel real-time based phasor and frequency estimator capable of measurements under transient conditions,” 2016 IEEE/PES Transmission and Distribution Conference and Exposition (T&D), Dallas, TX, USA, May 2016.
* A. Rahmati and R. Adhami, "An overcurrent protection relay based on local measurements," 2013 IEEE Industry Applications Society Annual Meeting, Lake Buena Vista, FL, USA, Oct. 2013.
* A. Rahmati and R. Adhami, "A fault detection and classification technique based on sequential components," IEEE Industry Applications Society Annual Meeting, Lake Buena Vista, FL, USA, Oct. 2013.
* A. Rahmati and R. Adhami, “An Accurate Fault Location Algorithm in Smart Grids,” IEEE Electric Ship Technologies Symposium -ISTS, Arlington, Virginia, USA, April 2013.
* A. Rahmati, “A Pilot Scheme Fault Detector for Transmission Lines Based on Sequential Reactive Power Components,” Submitted to IEEE International Conference on Magnet Technology, July 14 – 19, 2013, Boston, Massachusetts, USA.
* A. Rahmati and R. Adhami, “An Effective Filtering Algorithm to Mitigate Transient Decaying DC Offset,” 2014 IEEE PES T&D Conference and Exposition, Chicago, IL, USA, April 2014.
* A. Rahmati, “A Directional Current Differential Protection against CT Saturation in Two Sides Fed Networks,” Power Systems Conference & Exposition (PSCE), IEEE PES, 20-23 March 2011, Pages 1-5, Phoenix, Arizona, USA.
* A. Rahmati, “An Adaptive Differential Relay for CT Saturation Based on Wavelet Transform,” Transmission & Distribution Conference & Exposition, IEEE PES, Pages 1-6, New Orleans, LA, USA, April 2010.
* A. Rahmati and M. Sanaye-Pasand, “New Method for Discrimination of Transformers Internal Faults from Magnetizing Inrush Currents Using Wavelet Transform”, Power System Technology and IEEE Power India Conference, IEEE PES, 12-15 Oct. 2008, Pages 1-7, Delhi, India.
* S. Farhangi and A. Rahmati,” Modeling of capacitor impedance in switching converters,” 16th Iranian Conference of Elect. Engineering, pp. 212-218, Tehran, May 2008.

**Books and Chapter**

* Abouzar Rahmati (2009). Pattern Recognition Methods for Improvement of Differential Protection in Power Transformers, Pattern Recognition, Peng-Yeng Yin (Ed.), ISBN: 978-953-307-014-8, InTech.
* Abouzar Rahmati, “Numerical methods for Nonlinear Electromagnetic Problems”, Azad University press, 2009, in Persian.