Maryam Ismael

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Highlights

To research, design and create machine learning software products in industry. I specialize in machine learning, data mining and recommender systems. Particularly how search queries, advertising platforms and recommender systems can actively learn from each interaction using ML and DM methods.

Skills

Programming Languages: Python, Java and proficient in Matlab and R
Libraries & tools: TensorFlow, Theano, Stanford CoreNLP, Scikit-learn
MapReduce: Hadoop, Spark Streaming, MRStreaming , Hive, Hue
NoSQL: MongoDB
Tools: Eclipse, PyCharm, Xcode, Flask

Professional Experience

Machine Learning Scientist, Amazon, June 2015-Present

- In Amazon, we are using deep learning and NLP techniques to make key assortment and assortment-related decisions such as retailer and customer clustering, depth and breadth of ranges, complementarity of long tail online and localized in-store ranges, space-constrained assortments, and what might be called the new architecture of assortment attributes. Behind all of these innovations, we see a profound shift to a customer-centric approach and away from the mainstay strategy of product-centric assortment planning.

Senior Data Scientist and Software Engineer at Samsung Research America, March 2014-June 2015

- Designed and developed a song recommender system for Samsung Tune which is a smart speaker.
- Implemented a scalable collaborative filtering method using Spark to provide services for millions of requests
- Made a batch-training model to process sensor data in Smart Home project. The learning algorithms are HMM and Random Forest.

Senior Data Scientist, DataXu, July 2012- March 2014

- Frequency Analysis focusing on optimal ad frequency from a direct response standpoint; namely, how to increase the efficiencies of a campaign to deliver leads and sales.
- Multi-Channel Attribution Model based on the concept of a conversion funnel that captures the consumer's deliberation process using a Hidden Markov Model.
- A large amount of third party data from various vendors and generated models to recommend third party segment data for a specific advertiser based on the pixel activity on their webpage.
- Developed an automated fraud detection model by means of machine learning. In advertising, fraud traffic detection is of great importance. I have applied unsupervised and semi-supervised technics to find fraudulent users and domains.

Research Assistant, University of Massachusetts Amherst, Sep 2010-Sep2012

- Studied linear (Exponential Smoothing, ARIMA Models, ARFIMA Model), non-linear (ARMA-GARCH and STAR) and machine-learning models (Neural Networks) for time series forecasting.
- Examined the sufficiency of non-linear models for forecasting non-linear data sets. The data is taken from a high frequency data and short-term predictability of different models has been studied.
- The models implemented in R and the results are reported based on their statistical accuracy (Theirl's U) and economical accuracy (HIT). The best model for each data set has been chosen based on the best HIT and the best Theil's U.

Research Assistant, IDSIA (Dalle Molle Institute for Artificial Intelligence), Switzerland Sep 2007-Sep 2010

- An agent-based simulation model has been designed and developed (using Matlab) to model the dynamics and the evolution of housing markets (demand and supply) in Switzerland.
- The work encourages a move towards empirical experimentation guided by theory, dealing with both theory and quantitative/qualitative data.
- Different techniques of Artificial Intelligence are applied and combined in the model, testing the adaptability of the framework and their use for social simulation.

Research Assistant, Artificial Intelligence Lab, University of Tehran, Tehran, Iran Sep2006-August 2007

- Using of Dynamic Synapse Neural Networks (DSNN) for Noisy Signals Processing
- A DSNN has been developed (using Matlab) for EEG signals classification.
- Signal processing has been done by wavelet decomposition.
- A Genetic algorithm (GA) learning method with different fitness functions has been used to optimize the neural network.

Research Assistant, Pattern Recognition Lab, Polytechnic of Tehran, Tehran, Iran 2005~2007

- Variant Combination of Multiple Classifiers Methods for Classifying the EEG Signals in Brain-Computer Interface
- Using different methods in signal processing and pattern classification, a Brain-Computer Interface System has been designed and developed in order to recognize the decision of the Brain to either move to right or left.
- The result of the work was superior in compare to the best result of the BCI Competition in 2003.

Education

Ph.D. in Computer Science (Machine Learning), April 2012
University of Massachusetts Amherst, University of Lugano in Switzerland

Master's degree in Computer Science (Machine Learning and AI), June 2007
Amirkabir University of Technology (Polytechnic of Tehran), Tehran, Iran

Bachelor's degree in Applied Mathematics, June 2005
Iran University of Science and Technology Tehran, Iran

Teaching Experience

Teaching Assistant, University of Lugano, Spring 2008

- Teaching assistant for machine learning

Lecturer, Computer Science Department, Islamic Azad University, Tehran Iran, Fall 2005, 2006

- Lecturer of algorithms and data structures

Achievements

- Iranian Ministry of Science and Innovation Tuition Award, 2000-2004.
- Iranian Ministry of Science and Innovation Tuition Award, 2004-2006.
- Iranian Ministry of Science and Innovation Project Grant, 2006-2007.

- Swiss National Science Foundation Fellowship for Research at UMASS Amherst, 2010-2012.
- Swiss National Science Foundation Fellowship for Research at U. of Lugano, 2007-2010.
- Swiss National Science Foundation for outstanding young researchers, 2010
- Award from NSF on Creating Organizationally-Adept Software Agents and Their Organizations project, 2012

Publications

Book Chapters:

[1] Esmaeili M. "Modeling of intelligent agent behaviors in dynamic system" Book Chapter in Advances in Cognitive Systems, Herts, UK:IET Publisher.

[2] Maryam Esmaeili, Alberto Vancheri, and Paolo Giordano. "Modeling Housing Market Dynamics Using a Multi-agent Simulation of Participants' Cognitive Behavior" in Emergent Phenomena in Housing Markets Gentrification, Housing Search, Polarization Edited by Lidia Diappi.

Journal Papers

[1] Esmaeili, M. "Optimal selling price, marketing expenditure and lot size under general demand function", The International Journal of Advanced Manufacturing Technology (impact factor: 1.779) November 2009, Volume 45, Issue 1-2, pp 191-198 (cited by 10)

[2] Xu Zhang; Panlop Zeephongsekul; Maryam Esmaeili . "Seller-buyer supply chain games where shortage are permitted" Journal of management and strategy : JMS.- Toronto : Sciedu Pr, ISSN 1923-3965, ZDB-ID 26217144. - Vol. 3.2012, 4, p. 1-14 (cited by 1)

[3] Maryam Esmaeili, Prakash L. Abad, Mir-Bahador Aryanezhad. "Seller-Buyer Relationship when End Demand is Sensitive to Price and Promotion". Asia-Pacific Journal of Operational Research (impact factor: 10.3) APJOR 26(5): 605-621 (2009) (cited by 4).

[4] Maryam Esmaeili, Mir-Bahador Aryanezhad, Panlop Zeephongsekul. "A game theory approach in seller-buyer supply chain" European Journal of Operational Research (Impact Factor: 2.04) 195(2): 442-448 (2009) (cited by 112).

Conferences Papers

[1] Esmaeili. M "Creating Divers classification Systems in Processing of EEG Singnalsin Human- Computer Interfaces", Twenty-Second Conference on Artificial Intelligence (AAAI-07), Vancouver, British Columbia, Hyatt Regency Vancouver, July 22-6, **(Acceptance Rate: 27%)**

[2] Esmaeili. M, Rahmati. M, "Designing of Multiple Classifier Systems by Fuzzy Decision Making", IEEE International Conference on Fuzzy Systems, Imperial College,London, UK.

[3] Maryam Esmaeili, Mohamad H. Jabalameli, Zeinab Moghadam. "A New Scheme of EEG Signals Processing in Brain Computer Interface Systems". The 2007 IEEE International Conference on Granular Computing GrC 2007: 522-527. (Cited by 1)

[4] Esmaeili M. Mogadam Z, “Channel Selection in Brain Interface Systems”, IEEE International Conference on Intelligent Systems IS’08, Bulgaria.

[5] Esmaeili. M, Shoaie. Z, Bagheri. S, “Combination Of Multiple Classifiers With Fuzzy Integral Method for Classifying The EEG Signals in Brain-Computer Interface”, The International Conference on Biomedical and Pharmaceutical Engineering 20063 (ICBPE2006) (Cited by 4)

[6] Emaeili. M, Rahmati. M, “A New Scheme for Feature Selection in Ensemble with Majority Vote Combiner for EEG Signal Processing in Brain-Computer Interface“, the 13th Iranian Conference on Biomedical Engineering, 2006.

[7] Esmaeili M. Rahmati M "Using of multiple classifier systems in EEG Signals Processing in Brain- Computer Interface", 12th International CSI Computer Conference (CSICC2007), Tehran, Iran.

[8] Esmaeili M. Rahmati M “Bagging and Boosting Approach for EEG Signals Classifying in Brain- Computer Interface Systems”, 2007 ICEE Iranian Conference on Electrical Engineering (ICEE 2007), Iran Telecom Research Center, Tehran, Iran

[9] Esmaeili, M, A Vancheri, and P Giordano. “Mathematical and Computational Modeling of Housing Market Dynamics –System engineering point of view" IEEE International Systems Conference 2010. San Diego, CA, 2010.

[10] Esmaeili, M, A Vancheri, and P Giordano. "Extracting the Trading Rules in Housing Market Using Nash Genetic Programming Approach" 16th International Conference on Computing in Economics and Finance. London, 2010.

[11] Esmaeili, M, A Vancheri, and P Giordano. “Modeling of Demand in Housing Market through Multi- Agents Behavioral Modeling” ECCS’10 European Conference on Complex Systems. Lisbon, 2010.

[12] Esmaeili, M, A Vancheri, and P Giordano. “Modeling of housing market as an adaptive complex system” 22nd conference of the European Network for Housing Research, Urban Dynamics and Housing Change. Istanbul, 2010.

[13] Esmaeili, M, and A Vancheri. "A new Approach in Cooperative Decision Making in Multi-Agent System Inspired by Human Visual Cortex." 2010 IEEE / WIC / ACM International Conferences in Intelligent Agents Technology. Toronto, 2010, **Nominated for Best Student Paper Award (Acceptance Rate: 19%)**

[14] Maryam Esmaeili, Mahtab Mahmoodi, Mehdi Imani, Niloofar Mazhari and Majid Joudak “Presenting a New Approach for Predicting and Preventing Active/Deliberate Customer Churn in telecommunication industry”, WORLDCOMP'11 - The 2011 World Congress in Computer Science, Computer Engineering, and Applied Computing

[15] Esmaeili M. “The Minimal Product Parity Check Matrix and Its Application”, ICC '06. IEEE International Conference on Communications, (Cited by 2)

[16] Mosayyebpour, S. ; Lohrasbipeydeh, H. ; Esmaeili, M. “Time delay estimation via minimum-phase and all-pass component processing “; 2013 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)

[17] Esmaeili, M. Notice of Retraction Variable reduction for multi-objective optimization using data mining techniques; application to aerospace structures , 2010 International Conference on Computer Engineering and Technology (ICCET) (cited by 10)

[18] Alipour, H. ; Abbaspour, M. ; Esmaeili, M. ; Mousavi, H. ;Shahhoseini, H. “DACA: Dynamic Advanced Clustering Algorithm for Sensor Networks” 14th IEEE International Conference on Electronics, Circuits and Systems, 2007 (Cited by 5)

[19] Saremi, A. ; Esmaeili, M. ; Rahnama, M. "Evaluation complexity problem in agent based software development methodology. International Conference on Industrial and Information System ICIIS 2007 (cited by 5)

[20] Esmaeili, M. ; Rahmati, M. "Creating of Multiple Classifier Systems by Fuzzy Decision Making in Human-Computer Interface Systems" , 2007 IEEE International Conference on Fuzzy Systems. (Cited by 5)

[21] Esmaeili, M. ; Rabbani, H. ; Dehnavi, A.M. ; Dehghani, A. "A new curvelet transform based method for extraction of red lesions in digital color retinal images" 17th IEEE International Conference on Image Processing (ICIP10), (cited by 11)
[22] Esmaeili, M. ; Rabbani, H. ; Mehri, A. ; Dehghani, A. "Extraction of retinal blood vessels by curvelet transform" 16th IEEE International Conference on Image Processing (ICIP09), (cited by 13)

[23] Saremi, A. ; Esmaeili, M. ; Habibi, J. ; Ghaffari, A. "O2DSS: A Framework for Ontology-Based Decision Support Systems in Pervasive Computing Environment", Second Asia International Conference on Modeling & Simulation, AICMS 08, (Cited by 6)

[24] Xu, F. ; Esmaeili, M. ; Xie, C. ; Ghani, N. ; Peng, M. ; Liu, Q. "Enhanced Crankback Signaling for Multi-Domain Traffic Engineering" 2010 IEEE International Conference on Communications (ICC) (Cited by 5)

[25] Esmaeili, M. ; Abbaspour, M. ; Alipour, H. ; Mousavi, H. "Challenge in QoS Supporting via Integrating Differentiated Service and Multipath Routing on Mobile Ad Hoc Network" 7th IEEE International Conference on Computer and Information Technology (CIT 2007) (cited by 4)

Achievements

- Iranian Ministry of Science and Innovation Tuition Award, 2000-2004.
- Iranian Ministry of Science and Innovation Tuition Award, 2004-2006.
- Iranian Ministry of Science and Innovation Project Grant, 2006-2007.
- Swiss National Science Foundation Fellowship for Research at UMASS Amherst, 2010-2012.
- Swiss National Science Foundation Fellowship for Research at U. of Lugano, 2007-2010.
- Swiss National Science Foundation for outstanding young researchers, 2010
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