

# MARYAM S. MIRIAN

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## Data Scientist| Machine Learning Researcher

- Highly accomplished Data scientist with focus on implementing data mining and machine learning systems that solve real world problems.
- Expert in statistical and linguistic methods for data mining, information extraction and classification.
- Strength in Machine Learning, Statistical Modeling, Data Mining, Pattern Recognition, Information Retrieval, Natural Language Processing, or Search Ranking.
- Experience using all these ML techniques: clustering, regression, classification, graphical models, mixture models, topic models, and matrix factorization, reinforcement learning.
- Knowledge of distributed computing solutions and ability to leverage them towards gaining faster insights from data.
- Expert in defining business intelligence questions and designing predictive analysis solutions.
- Excellent communication and team promotion skills.

### KEY AREAS OF EXPERTISE

- Machine Learning techniques
- Statistical Modeling
- Visualization techniques
- Deep learning
- Multi-modal data fusion
- Business Analytics
- Search Ranking
- Brain Connectivity Methods
- Cross Functional Coordination
- Cognitive Science
- Team Managements
- Outstanding Teaching Skills

### TECHNICAL PROFICIENCY

**Programming Languages:** Matlab, R, Python, C#.Net

**Data mining Packages:** Weka, SPSS

**BI tools:** Tableau, Pentaho, MS Excel

**Relational DBMS:** MS SQL server, MySql

**Familiar with** ITIL and COBIT

**Familiar with** Git/Subversion for Continuous Integration

**Neuronal Simulators:** Nengo

**Robotics Simulator:** Webots

**Hardware Description Languages:** VHDL, Verilog

### EXPERIENCE

#### Machine learning Research Scientist

UNIVERSITY OF BRITISH COLUMBIA, Vancouver, BC

2014-Present

#### Projects & Accomplishments:

- Designing a decision support system for helping the pediatrics at Sleep Lab of BC Children Hospital for automating the recognition of movement patterns in sleep of children with neurodevelopmental disorders using 2D video and EMG measurements recorded from legs and feet
- Collaborated with Prof. Rabab K. Ward and co-supervised a project to recognize user's Mood based on gaze and face reader data.
  - ✎ M. Hashemian, H. Moradi, M. S. Mirian, M. Tehrani-Doost, and R. K. Ward, "Is the Mood Really in the Eye of the Beholder?," in HCI International 2015 - , Springer International Publishing, 2015, pp. 712-717.
- Collaborated on creating modeling devise on automating Mitral Regurgitation (MR) recognition with accuracy over 80% using ICA modeling techniques at Dr. Purang Abolmaesumi's Lab at UBC.
  - ✎ A Manuscript to be published in IEEE Transactions on Medical Imaging, title: "Simultaneous Analysis of 2D Echo Views for Left Atrial Segmentation and Disease Detection"

- Contributed in Creating a modeling devise using Bayesian Network to reduce overhead of Post-Silicon coverage monitoring by **Dr. Alan Hu, Dr. Andre Ivanov**.

✉ R. O. Gallardo, A. J. Hu, A. Ivanov, and M. S. Mirian, "Reducing Post-Silicon Coverage Monitoring Overhead with Emulation and Bayesian Feature Selection," in Proceedings of the IEEE/ACM International Conference on Computer-Aided Design, Piscataway, NJ, USA, 2015, pp. 816–823.

### **Assistant Professor –AI & Machine Learning Group**

**2011-2014**

University of Tehran, Faculty of Engineering, Tehran, Iran

Developed innovative machine learning and data mining technologies, for solving novel and diverse sets of problems. Managed end-to-end machine learning pipeline from data exploration, feature engineering, model building, performance evaluation, and online testing with large data sets. Taught subjects to undergraduate and graduate students on subjects- Artificial Intelligence, Decision support systems and Statistical pattern Recognition.

#### *Projects & Accomplishments:*

- Advised and acted as the project manager for *Expert Finding* project for Iran NSF: Implemented a system suggesting related reviewer for submitted proposals to different INSF work groups
- Conducted a research on Knowledge Map creation for visualizing what/why/how aspects of activities encoded in daily interactions in education and research data of an enterprise
- Co-Advised the research on Students' mood and emotion extraction from the pattern of mouse movements and style of typing
- Recognized as one of top lecturers among university professors in annual assessment done by students in University of Tehran.

### **Researcher & Algorithm Developer**

**2002-2006**

**IRAN TELECOM RESEARCH CENTER:** Tehran, Iran

Conducted research on e-content generation and knowledge network design. Communicated findings to product, engineering, and management teams. Gained hands on experience in conceptual modeling, e-enterprise and knowledge/expertise management systems.

#### *Projects & Accomplishments:*

- Collaborated and developed a Question Answering System named TeLQAS with major focus on NLP, Query Processing, Text Summarization and Categorization and Crawling from the web.

## **EDUCATION & TRAINING**

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### **Ph.D - Computer Engineering, Robotics and Machine Intelligence**

**2010**

University of Tehran, Faculty of Engineering, Tehran, Iran

### **M.Sc - Computer Engineering, Robotics and Machine Intelligence**

**2003**

University of Tehran, Faculty of Engineering, Tehran, Iran

### **B.Sc - Computer Hardware Engineering**

**1999**

University of Tehran, Faculty of Engineering, Tehran, Iran

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## MAIN PUBLICATIONS

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- **Reward Maximization Justifies the Transition from Sensory Selection at Childhood to Sensory Integration at Adulthood,**  
P. Daei, **M. S. Mirian**, and M. N. Ahmadabadi, *'Reward Maximization Justifies the Transition from Sensory Selection at Childhood to Sensory Integration at Adulthood'*, PLoS ONE, vol. 9, no. 7, p. e103143, Jul. 2014.
- **Mixture of Experts task and attention learning, Journal of Intelligent and Fuzzy systems**  
**Maryam S. Mirian**, Majid Nili Ahmadabadi, Babak N. Araabi, Roland Siegwart, *METAL: Mixture of Experts task and attention learning, Journal of Intelligent and Fuzzy systems*, Volume 23, Number 4/2012, pages 111-128.
- **Interactive Learning in Continuous Multimodal Space: A Bayesian Approach to Action-Based Soft Partitioning and Learning**  
H. Firouzi, M. N. Ahmadabadi, B. N. Araabi, S. Amizadeh, **M. S. Mirian**, and R. Siegwart, *"Interactive Learning in Continuous Multimodal Space: A Bayesian Approach to Action-Based Soft Partitioning and Learning,"* IEEE Transactions on Autonomous Mental Development, vol. 4, no. 2, pp. 124–138, Jun. 2012.
- **Learning Active Fusion of Multiple Experts' Decisions: An Attention-based Approach, Neural Computation**  
**Maryam S. Mirian**, Majid Nili Ahmadabadi, Babak N. Araabi, *Learning Active Fusion of Multiple Experts' Decisions: An Attention-based Approach, Neural Computation*, MIT Press, February 2011, Vol. 23, No. 2, Pages 558-591.

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## REFERENCES

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**Prof. Rabab K. Ward**  
University of British Columbia  
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Email: rababw@ece.ubc.ca

**Prof. Purang Abolmaesumi**  
University of British Columbia  
Telephone: 604-827-4741  
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**Prof. Majid Nili Ahmadabadi**  
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