**SMA (HAMED) SALEHIZADEH**

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**SUMMARY**

With degrees in Electrical and Biomedical Engineering and 9 years of hands-on experience as financial, educational and biomedical quantitative analyst and predictive modeler, I confidently express my interest in your posting for the Quantitative Analyst position. My background knowledge of machine learning and statistics with the experience of analysis, modeling and forecasting of financial data (Housing Market, Foreign Exchange, etc.) is well matched with the company core business and vision. As a financial quantitative analyst in Mellat Bank R&D center, I gained valuable experience in causality analysis and probabilistic modeling using Bayesian Networks for modeling and prediction of annual monetary resources of the bank. As a financial quantitative analyst in Kayson Company, I developed mathematical models using combination of regression and Fibonacci analysis to long and mid-term forecasting of Housing and Foreign Exchange Markets. During my graduate studies in U.S. I started with educational quantitative analysis in Assistments Lab analyzing the data acquired from Assistments Tutoring system using Bayesian networks, later on in Chon Lab I developed noise detection algorithms and data reconstruction models using advanced signal processing techniques. My advanced technical background, creative analytic skills, and effective collaborations helped me to successfully developed quantitative analysis algorithms and mathematical models which have been used for investment planning, financial administrative decision making in the companies I worked for and those of research studies and outcomes were published in high ranked conference and peer-reviewed journal papers. I believe that with my work and research experience, I would be able to make valuable contributions to your company as a Quantitative Analyst.

**EDUCATION**

**PhD, Biomedical Engineering** – Current (Last Year)

University of Connecticut (UCONN), Storrs Mansfield, Connecticut, United States

**PhD, Biomedical Engineering** – August 2014

Worcester Polytechnic Institute (WPI), Worcester, Massachusetts, United States

**MSc, Electrical Engineering** – December 2009

[Amirkabir University of Technology (AUT) - Tehran Polytechnic](https://www.linkedin.com/edu/amirkabir-university-of-technology---tehran-polytechnic-13712), Iran

**BSc, Electrical Engineering** – September 2006

[K. N. Toosi University (KNTU) - Tehran](https://www.linkedin.com/edu/amirkabir-university-of-technology---tehran-polytechnic-13712), Iran

**TECHNICAL SKILLS**

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| * Programming Languages: C++, C#.Net, * Analytical Software: MATLAB, R, SPSS, SAS, Excel * Quantitative Analysis, Statistical and Mathematical Modeling: Regression Analysis, Predictive Modeling * Machine Learning and Artificial Intelligence: Support Vector Machine (SVM), Bayesian Networks, Neural Networks, Fuzzy Logic, Genetic Algorithm, Particle Swarm Optimization * Signal Processing: Signal Preprocessing (e.g. filtering), Decomposition, Frequency domain Analysis, Time-Frequency Analysis, Pattern Recognition * Subjectivity Measurement and Evaluation: Q-methodology and Factor Analysis |

**PROFESSIONAL EXPERIENCES**

**Biomedical Quantitative Research Assistant** (Aug. 2014 – Present)

University of Connecticut, BME Department, Chon Lab, Storrs, CT

* Developed a novel approach for Heart Rate monitoring during intensive physical activities using PPG signal, with HR tracking accuracy of 98% (article under review)
* Proposed a novel time-varying spectral technique for noise detection with over 95% detection accuracy (article under review)
* Proposed a technique based on recurrence plot quantification and processing for motion artifact detection with over 95% detection accuracy (article under review)
* Performed modeling and Prediction of PPG and ECG Signals and proposed 2 novel approaches using predicative models for PPG signal reconstruction
* Proposed a novel technique for Motion Noise Artifact Detection based on Variable Frequency Complex Demodulation method.

**Educational/Biomedical Quantitative Research Assistant** (Jan 2013 – Aug 2014)

Worcester Polytechnic Institute, CS Department, ASSISTment Lab, Worcester, MA

* Proposed a novel method for Student Knowledge Tracing in Assistment tutoring system based on Bayesian Networks

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* Published a paper at 6th international conference on Educational Data Mining (EDM)

Worcester Polytechnic Institute, BME Department, Chon Lab, Worcester, MA

* Proposed an artifact reduction based on Singular Spectrum Analysis that was able to retrieve accurate heart rate and oxygen saturation estimates from PPGs recorded during motion (published a peer-review paper, ABME 2014)
* Proposed a detection algorithm of artifacts in PPGs during unrestrained motions using time-domain features and Support Vector Machine (published a peer-review paper, ABME 2014)
* Presented a poster about the artifact detection and reconstruction algorithms at Military Health System Research Symposium (MHSRS) – 18th-21st Aug 2014, Fort Lauderdale Florida.

**Financial Quantitative Analyst** (Feb 2012 – Oct 2012)

[Bank Mellat Research and Development Center](https://www.linkedin.com/company/1616815?trk=prof-exp-company-name), Tehran, Iran

* Head of the executive team for development of a probabilistic decision support system
* Proposed the idea of Bayesian Network based decision support system to predict the long-term monetary resources of Mellat Bank
* Implemented the proposed DSS to forecast the annual monetary resources in the bank

**Financial Quantitative Analyst** (Dec 2010 – Jul 2011)

[Kayson](https://www.linkedin.com/company/1616815?trk=prof-exp-company-name) Company (KC), Investment Administration, Tehran, Iran

* Developed a model for long-term prediction of Foreign exchange market (Forex) using machine learning and probabilistic techniques.
* Developed a model for Kayson Company’s housing investment market using data mining and mathematical techniques.

**Research Consultant** (Sep 2009 – Nov 2010)

Advanced Artificial Intelligence R&D Lab, Tehran, Iran

* Executive Consultant of a project, “Bankruptcy prediction for Saman Financial Group”
* Proposed a detailed procedure for bankruptcy prediction based on support vector machines
* Collaborated in a financial project, “Financial Portfolio Optimization Using Differential Evolution Algorithm”

**DATA ANALYSIS PROJECTS (2010-2015)**

**Financial Portfolio Optimization Using Differential Evolution Algorithm**

Advanced Artificial Intelligence R&D Lab, Apr 2010 – Nov 2010

**Bankruptcy Prediction Using Support Vector Machines: An Application for Saman Financial Group**

Advanced Artificial Intelligence R&D Lab, Jun 2010 – Nov 2010

**Analysis and Forecasting of Financial Market Using Machine Learning Approaches**

Investment Administration, Kayson Company (KC), Dec 2010 – Oct 2011

**Development of a Decision Support System to Predict the Annual Monetary Resources Using Bayesian Networks**

Research and Development Center, Mellat Bank, Feb 2012 – Sep 2012

**Development of New Method for Student Knowledge Tracing in Assistment Tutoring System based on Bayesian Networks**

ASSISTment Lab, WPI, Jan 2013 – Sep 2013

**Motion Artifact Reduction and Biomedical Data Reconstruction Using Signal Decomposition**

Chon Lab, UCONN, Sep 2013 – Sep 2014

**Photoplethysmogram Signal Modeling and Prediction Using Machine Learning Approaches**

Chon Lab, UCONN, Sep 2014 – Dec 2014

**Motion Artifact Detection in Photoplethysmogram Signal Using Recurrence Plot Processing**

Chon Lab, UCONN, Dec 2014 – Mar 2015

**Heart Rate Monitoring from Photoplethysmogram Signal during Intensive Physical Activities Using Time-Varying Spectral Analysis**

Chon Lab, UCONN, Mar 2015 – Current

**IMMIGRATION STATUS**

* Authorized to work under (EB2) NIW petition.
* Green Card application is under processing