Sahar Ghanavati

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Summary Of Qualification

- 10+ years experience in OOP and agile software development in Windows, Linux and MacOS
- 4+ years of experience in leading teams of engineers, analysts and medical professionals, managing projects to productionization
- Extensive experience in Machine Learning, Deep Learning and Computer Vision: scikit-learn, Tensorflow, Caffe, Word2Vec, OpenCV, ITK
- Programming: C/C++, Python (Pandas, SQLAlchemy, Beautiful Soup, Matplotlib, multiprocessing), R (ggplot), MySQL, Flask, MATLAB
- Tools: Git, JIRA, Amazon AWS, Chartio, Splunk, ArcGIS, D3.js
- English (Proficient), French (Intermediate), Arabic, Spanish (Beginner), Persian (Native)

Professional Experience

Senior Data Scientist, Vettery, New York, NY — Nov 2017 - Present

- Developed a recommendation engine from ideation to productionization using content-based and collaborative filtering, which increased user engagement by 30%
- Developed predictive models for auto-ranking candidates using a combination of Logistic Regression, Random Forest and SVM, reducing operations costs by 50%
- Performed continuous A/B testing and post-production monitoring in Chartio
- Developed the ETL pipeline in collaboration with the data engineering team
- Directed the growth of the data science team by conceptualizing and executing the project roadmap and doubled the size of the team through active hiring

Software Engineer, Nemaris (Surgimap), New York, NY — Sep 2016 - Nov 2017

- Developed surgical planning tools, including automatic segmentation of surgical pre-op images, using Caffe (Deep Learning Framework) and OpenCV DNN
- Led a team of 5 engineers and surgeons, developing a real-time surgical tracking and feedback system using automatic registrations of intra-op ultrasounds with post-op CTs of the spine
- Managed junior software developers through JIRA and reviewed code in Qt and C++

Database Developer (Contract), Dawes Cemetery, Toronto, Canada — Nov 2013 - Sep 2014

- Re-designed and migrated existing database from dBase to MySQL
- Developed a GUI for the common user to interact with the database using Qt

Research Engineer (Contract), AUG Signals, Toronto, Canada — Mar 2011 - May 2013

- Led medical imaging team and facilitated communications among engineers, radiologists and business analysts
- Designed and implemented algorithms including Adaptive Boosters, Random Forests and Fuzzy C-means for automatic tumour detection and staging in human brain MRI/PET using OpenCV, ITK and MATLAB
- Co-authored patent and grant applications, and presented quarterly reports to government grant agencies

Software Engineer Intern, Green Sciences, Tehran, Iran — May 2006 - Sep 2006

- Developed a sequential image processing algorithm for automatic identification of vehicle license plate numbers using morphological filters and KNN in OpenCV

Academic Experience

Research Assistant, Mouse Imaging Centre, Toronto, Canada — Sep 2010 - Sep 2016

- Developed an automatic graph labelling algorithm formulated as a Maximum a posteriori (MAP) estimation on Markovian random field of cerebral vascular network in 3D micro-CT images in Python through simulated annealing and stochastic tunnelling optimization
- Developed an interactive visualization software for 3D objects used for the construction of a training set of labelled vascular data using C++11, Qt, Coin 3D, and HDF5 API https://github.com/sghanavati/brain-view2
- Performed statistical analysis of inter-subject variations in cerebral vascular networks in mouse models using Python and R

Research and Teaching Assistant, Queen's University, Kingston, Canada Sep 2008 - Aug 2010

- Developed an algorithm for automatic registration of ultrasound images to a statistical shape model of pelvis using C++, ITK, VTK, and MATLAB

Education

- **PhD**, Medical Biophysics, University of Toronto, Canada — 2016
- **MSc**, Electrical and Computer Engineering, Queen's University, Canada — 2010
- **BSc**, Electrical and Computer Engineering, Sharif University, Iran — 2008

Selected Publications

1. **S. Ghanavati**, J. Lerch, J. Sled, Poster: *A Probabilistic Approach to Identifying Cerebrovascular Differences Between Mouse Strains*, CAN-ACN, 2016
2. **S. Ghanavati**, J. Lerch, J. Sled, *Improved Method for Automatic Cerebrovascular Labelling using Stochastic Tunnelling*, Workshop on Pattern Recognition in Neuroimaging, 2014
3. **S. Ghanavati**, J. Lerch, J. Sled, *Automatic Anatomical Labeling of the Complete Cerebral Vasculature in Mouse Models*, NeuroImage 95, 2014
4. J. Li, **S. Ghanavati**, T. Liu, G. Lampropoulos, A. Sinha, *Automatic Detection and Recognition of Tumors in Brain MR/PET Images*, US Provisional Patent 2012