Sara Soltaninejad

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HIGHLIGHTS

Research Area: Machine Learning, Deep Learning, Computer Vision, Data Mining, Pattern Recognition, Medical Image and Signal Processing.

EDUCATION

- **PhD**, **Computer Science (GPA: 4/4)** 2016-Now
  Department of Computing Science, **University of Alberta**, Edmonton, Canada.
  Thesis: Intelligent Parkinson's Disease Classification and Progress Monitoring using Non-invasive Techniques.

- **M.S**, **Computer Engineering (GPA: 18.03/20)** 2010-2013
  Department of Computer Engineering, **Shiraz University**, Shiraz, Fars, Iran.
  Thesis: Computer aided diagnostic system for lung nodule detection in CT images.

- **B.S**, **Information Technology Engineering (GPA: 16.74/20)** 2006-2010
  Department of Electrical and Computer Engineering, **Isfahan University of Technology**, Isfahan, Iran.
  Thesis: Risk management in the information systems

WORKING EXPERIENCE

- Research Experiences
  - Parkinson's Disease (PD) diagnosis and prognosis using fMRI images. 2019-Present
    Techniques: Machine learning.
    Tools: Python, Matlab.
  - Parkinson's Disease (PD) diagnosis and prognosis using PET images. 2019-Present
    Techniques: Reinforcement Learning, Machine learning.
    Tools: Python, Matlab.
  - Parkinson's Disease (PD) diagnosis and prognosis using gait analysis. 2018-Present
    Techniques: Signal processing, Machine learning.
    Tools: Matlab, Python, Sklearn, Scipy.
  - Parkinson's Disease (PD) assessment using MR brain images (T1 and T2). 2017-2019
    Techniques: Image processing, Computer Vision, Machine learning, Deep Learning.
    Tools: Matlab, Python, Sklearn, OpenCV, scikit-image, Keras, Tensorflow.

- White matter injury detection in preterm Infant's MR brain image. 2016-2017
  Techniques: Image processing, Computer Vision, Machine learning.
  Tools: Matlab, Python, Sklearn, OpenCV.
- Robust lung segmentation combining adaptive concave hulls with active contours. 2016
  Techniques: Image processing, Computer Vision, Machine learning.
  Tools: Matlab.
- Removal of batch effects from fMRI Images using probabilistic graphic techniques. 2016
  Techniques: Image processing, Machine learning, Deep learning.
  Tools: Matlab, python, Keras.
- Retinal image super resolution using deep convolutional neural network. 2016
  Techniques: Image processing, Machine learning, Deep learning.
  Tools: Matlab, python, Caffe.

- Teaching Experience
  - Machine Learning, Lecturer. Fall 2018-19
  - Graphics Animation 3DS MAX, Lab Instructor. Fall 2017, Winter 2019
  - Introduction to Multimedia Technoloty, Lab Instructor, Lecturer. Winter 2016, 2017
  - Introduction to the Foundations of Computation II, Lab Instructor. Fall 2016
  - Introduction to Data Structure, Lab Instructor. Winter 2016
  - Image Processing , Lab Instructor, Lecturer. Fall & Spring 2011-2012
  - Advanced Programming, Lecturer. Fall 2007-2009
- Software Engineer in Samaneh Pardaz Delta company, Tehran, Iran. 2013-2015

PUBLICATIONS

- **Sara Soltaninejad**, Pengda Xu, Irene Cheng, Parkinson's Disease Mid-brain Assessment using MR T2 Images, BIBE 2019.
- **Sara Soltaninejad**, Irene Cheng, Anup Basu, Kin-FOG: Automatic Simulated Freezing of Gait (FOG) Assessment System for Parkinson's Disease, Sensors 2019, 19(10), 2416.
- **Sara Soltaninejad**, Irene Cheng, Anup Basu, Automatic Classification and Monitoring of Denovo Parkinson's Disease by Learning Demographic and Clinical Features, Engineering in Medicine and Biology Conference (EMBC), 2019.
- **Sara Soltaninejad**, Andres Rosales-Castellanos, Fang Ba, Mario Alberto Ibarra-Manzano, Irene Cheng, Body movement monitoring for parkinson's disease patients using a smart sensor based non-invasive technique, IEEE International Conference on E-health Networking, Application & Services (IEEE-Healthcom), 2018.
- **Sara Soltaninejad**, Irene Cheng, Anup Basu, Towards the identification of parkinson's disease using only T1 MR Images, International Conference on Smart Multimedia (ICSM), 2018.

- Chirag Balakrishna, Sarshar Dadashzadeh, **Sara Soltaninejad**, Automatic detection of lumen and media in the IVUS images using U-Net with VGG16 Encoder, International Conference on Smart Multimedia (ICSM), 2018.
- David Yee, **Sara Soltaninejad**, Deborsi Hazarika, Gaylord Mbuyi, Rishi Barnwal, Sara Soltaninejad, Anup Basu, Medical image compression based on region of interest using Better Portable Graphics (BPG), IEEE International Conference on Systems, Man, and Cybernetics (SMC), 2017.
- **Sara Soltaninejad**, Irene Cheng, Anup Basu, Robust lung segmentation combining adaptive concave hulls with active contours, IEEE International Conference on Systems, Man, and Cybernetics (SMC), 2016.
- **Sara Soltaninejad**, Mohammad Hossein Shakoor, Farshad Tajeripour, Lung nodule segmentation based on modified local binary pattern, International Journal of Scientific and Engineering Research, 2015.
- Alimohammad Nickfarjam, **Sara Soltaninejad**, Farshad Tajeripour, Supervised bi-level thresholding based on Particle Swarm Optimization (PSO), Arabian journal for science and engineering (AJSE), 2014.
- **Sara Soltaninejad**, Farshad Tajeripour, Lung segmentation method based on concavity degree of border points, 11th Intelligent Systems Conference (ICIS), 2013.
- Alimohammad Nickfarjam, **Sara Soltaninejad**, Farshad Tajeripour, An supervised bi-level thresholding method based on Particle Swarm Optimization (PSO), Artificial Intelligence and Signal Processing (AISP), 2012.
- **Sara Soltaninejad**, Mohsen Keshani, Farshad Tajeripour, lung nodule detection by KNN classifier and active contour modeling and 3D visualization, Artificial Intelligence and Signal Processing (AISP), 2012.

AWARDS & HONORS

- Travel grant for attending to the **Data Management & Intelligence Conference 2019 (DMC)**. 2019
- Travel grant for participating to the **Acm Canadian Celebration of Women in Computing 2019 (CAN-CWIC)**. 2019
- **Best poster award** in Reverse Expo 2019 in Edmonton, AB, Canada. 2019
- Selected as **top 15** team from Alberta Innovate to get the travel grant for the **Inventure conference, 2018** in Calgary, AB, Canada. 2018
- Travel grant for participating to the **Grad Cohort for Women 2018 (CRA-W)**. 2018
- **AITF Scholarship** at University of Alberta. 2017-2020
- **Recruitment Scholarship Doctoral**, Department of computing science, University of Alberta, Edmonton, Canada 2016-2017
- **Ontario Trillium Scholarships (OTS)**, University of Ontario Institution of Technology, Toronto, Canada. 2015-2016

VOLUNTEER EXPERIENCES

- Supervision of a visitor PhD student in MRC 2019
  - Parkinson's Disease (PD) classification using fMRI images.
- Paper revisions 2019
  - ICSM 2018-19.
  - EMBS 2018.
  - Healthcom 2018.
  - SMC 2017.
- Supervision of summer intern in MRC 2018
  - Parkinson's Disease (PD) classification using T1 images with Deep Learning models.
- Mentoring master's and undergraduate's students project 2017-Now
  - Parkinson's Disease (PD) classification using DTI images.
  - Parkinson's Disease (PD) classification using PET images.
  - Parkinson's Disease (PD) classification using T2 images.
  - 3D point cloud object classification.
  - Medical image compression using BPP algorithm.
- Special session organizer for ICSM. 2018-2020
- CSGSA councillor alternate at the university of Alberta. 2018 - 2019
- Member of Ada's team of University of Alberta. 2017 to now
- Operation chair for IEEE-SMC 2017. 2017
- Tutoring (Neural Network, Advanced Programming, Logical Circuit) 2009-2014

TECHNICAL SKILLS

- **Programming Languages**: Python, Matlab, C and C++, C#, Qt.
- **Machine Learning and Deep learning**: Sklearn, Keras, Tensorflow, Familiar with Pytorch.
- **Computer Vision**: OpenCV, scikit-image.
- **Numerical Analysis, Optimization & Database Libraries**: NumPy, SciPy, Pandas, CSV, Matplotlib, Seaborn, Familiar with MySQL.
- **Medical imaging**: NiBabel, Freesurfer, SPM/CAT, FSL, Nipype.
- **Operating Systems**: Mac, Linux, Dos, Windows.
- **Graphical Software**: 3DsMax, Motionbuilder.