

Sara Soltaninejad

Multimedia Research Center

Department of Computing Science

University of Alberta

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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: A multi-modal approach to diagnosis and progress prediction for neurological and movement disorder symptoms.
Relevant Courses: Probabilistic graphic modeling (PGM), Convolutional neural network (CNN), Computer vision & applications: medicine & industry, Video and Applications.
- **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.
Relevant Courses: Statistical pattern recognition, Neural networks, Fuzzy systems, Machine learning, Evolutionary computing, Digital image processing, Machine vision.
- **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 Relevant Courses: Basic programming, Advanced programming, Discrete structures, Computer architecture, Operating systems, Software engineering.
- **Diploma, High School, Middle School** 1995-2006
[Center of National Organizations for Development of Exceptional Talents \(NODET\)](#), Shahre-Kord, Iran.
 - Area of Study: Physics & Mathematics
 - Total Cumulative GPA: 19.75/20

WORKING EXPERIENCE

- Selected Research Experiences
 - 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 image. 2017-2018
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.
- Selected Teaching Experience
 - Graphics Animation 3DS MAX, Lab Instructor. Fall 2017, Winter 2019
 - Introduction to Multimedia Technology, 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

SELECTED 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

- Admitted for getting the grant for attending to the **Data Management & Intelligence Conference 2019 (DMC)**. 2019
- Admitted for getting the 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
- Admitted as top 15 team from Alberta Innovate and selected to get the travel grant for the **Inventure conference, 2018** in Calgary, AB, Canada. 2018
- Admitted for getting the travel grant for participating to the **Grad Cohort for Women 2018 (CRA-W)**. 2018

- Admitted for **AITF Scholarship** at University of Alberta. 2017-2020
- Admitted for **Recruitment Scholarship Doctoral**, Department of computing science, University of Alberta, Edmonton, Canada 2016-2017
- Admitted for **Ontario Trillium Scholarships (OTS)**, University of Ontario Institution of Technology, Toronto, Canada. 2015-2016

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.

VOLUNTEER EXPERIENCES

- 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
- Tutoring. (Neural Network, Advanced Programming, Logical Circuit) 2009-2014