Fereshteh S. Bashiri

Curriculum Vitae

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*Artificial Intelligence, Machine Learning, Deep Learning,
Image Processing, Healthcare Informatics*

Professional Summary

A graduate of Electrical Engineering with minor in Computer Science, with strong background in applied mathematics and programming skills. I am passionate about statistical analysis, machine learning and artificial intelligence in healthcare informatics, aiming to bring the best healthcare to patients. I have 5+ years of experience in industry, academia, and research, with strong team-work ethics and presentation skills.

Education

2013 – 2019 **Ph.D., Electrical Engineering**, *University of Wisconsin-Milwaukee*, WI, USA.
Machine Intelligence for Advanced Medical Data Analysis: Manifold Learning Approach
Advisers: Dr. Zeyun Yu and Dr. Roshan M D'Souza
GPA: 4.00/4.00

2007 – 2009 **Ms.C., Electrical Engineering**, *Sharif University of Technology*, Tehran, Iran.
Thesis: Quantum-Dot Cellular Automata (QCA): Theory and Application
GPA: 17.06/20

2002 – 2007 **Bs.C., Electrical Engineering**, *Shahid Behshti University*, Tehran, Iran.
Thesis: Hardware Implementation of an OCR Algorithm
GPA: 17.12/20

Publications

[1] J C Badger, E LaRose, J Mayer, **F S Bashiri**, D Page, and P Peissig. Machine learning for phenotyping opioid overdose events. *Journal of Biomedical Informatics*, 94:103185, 2019.

[2] R Rostami, **F S Bashiri**, B Rostami, and Z Yu. A survey on data-driven 3D shape descriptors. *Computer Graphics Forum*, 38(1):356–393, 2018.

[3] TR Schaid, AH Abdelhafeez, M Ranji, RB Love, SH Audi, S Kaul, **FS Bashiri**, M Masoudi-Motlagh, F Salehpoor, E Jacobs, and JC Densmore. Surface fluorescence studies of tissue mitochondrial redox state in ex-vivo lung perfusion. In *Shock*, volume 41, pages 47–47, 2014.

[4] A P Taft, M Assefi, E LaRose, J C Badger, Z Ye, N Shimpi, **F S Bashiri**, E Sagheb, H McLean, D Page, and P Peissig. Big data deep neural network to analyze adverse vaccine reaction. In *AMIA Informatics Summit*, 2018.

[5] A P Taft, **F S Bashiri**, E LaRose, and P Peissig. Diagnostic classification of lung CT images using deep 3D multi-scale convolutional neural network. In *2018 IEEE International Conference on Healthcare Informatics (ICHI)*, pages 412–414. IEEE, 2018.

[6] **F S Bashiri**, J C Badger, R M D'Souza, Z Yu, and P Peissig. Lung nodule classification using

combined deep and spectral 3D shape features. In *IEEE-EMBS International Conference on Biomedical and Health Informatics (BHI)*. IEEE, 2019.

[7] **F S Bashiri**, A Baghaie, R Rostami, R M D'Souza, and Z Yu. Multi-modal medical image registration with full or partial data: A manifold learning approach. *Journal of Imaging*, 5(1), 2019.

[8] **F S Bashiri**, E LaRose, J C Badger, R M D'Souza, Z Yu, and P Peissig. Object detection to assist visually impaired people: A deep neural network adventure. In *International Symposium on Visual Computing (ISVC)*, pages 500–510. Springer, 2018.

[9] **F S Bashiri**, E LaRose, P Peissig, and A P Tafti. MCIndoor20000: a fully-labeled image dataset to advance indoor objects detection. *Data in Brief*, 17:71–75, 2018.

[10] **F S Bashiri**, R Rostami, P Peissig, R M D'Souza, and Z Yu. An application of manifold learning in global shape descriptors. *Algorithms*, 12(8):171, 2019.

[11] **F S Bashiri**, H Tavassoli, R Faez, and S B Shooraki. A novel 3-input and/or gate in quantum-dot cellular automata with single clock zone and minimum area. In *International Semiconductor Device Research Symposium*, 2009.

[12] **F S Bashiri**, H Tavassoli, R Faez, and S B Shooraki. Quantum-dot cellular automata counter with start/stop and reset inputs. In *International Semiconductor Device Research Symposium*, 2009.

Professional Experience

Sep. 2020
Present
Research Associate, *University of Wisconsin-Madison*, WI.
Contributing to cutting-edge research in the field of health informatics with a focus in health outcomes, applied predictive modelling, and high throughput phenotyping.

Jul. 2019
Aug. 2020
Project Scientist I, *Marshfield Clinic Research Institute*, WI, [**CPMR**].
A scientific collaborator at the Center for Precision Medicine Research. I also conducted research on lung nodule diagnosis using shape analysis and Graph Convolutional Networks in MatLab and Python.

Sep. 2017
Jul. 2019
Research Specialist, MS Informatics, *Marshfield Clinic Research Institute*, WI, [**BIRC**].
I developed techniques for medical image analysis with applications in health informatics using spectral analysis, machine and deep learning methods in platforms including MatLab, Python, and TensorFlow.

Summer 2017
Graduate Research Assistant Intern, *Marshfield Clinic Research Institute*, WI, [**SRIP**].
MCIndoor: A Computer Vision Framework To Assist Navigation of Visually-impaired People. I utilized and compared feature extraction and transfer learning capabilities of a deep learning method.

Mar. 2012
Jun. 2013
Research Engineer, *Sherkat Kontorsazi Iran (SKI)*, Tehran, Iran.
Design and development of digital electricity meters for mass production. I conducted research on various parts of meters including the measuring system, RTC, calibrating methods, as well as test and validation procedures.

Feb. 2012
Aug. 2012
Electronic and Microcontroller Firmware Engineer, *Daygan Gostaran Sanat (DGS) Co.*, Tehran, Iran – Part time.
Contributed in design and production of several electronic devices such as a smart security system, an automatic vehicle locator, a long distance data transmission system, as well as a temperature and humidity measuring system.

Sep. 2011 Jul. 2013	**Electronic and Firmware Engineer**, *Abzar Teb Iran*, Tehran, Iran – Part time. Design and production of: 1) Hospital autoclaves for sterilizing surgery room equipment in compliance with international standards; 2) A temperature and pressure monitoring system and data logger.
May 2010 Jan. 2012	**Electronic and Firmware Engineer**, *Hoorpendar C.T.I*, Tehran, Iran. Design and production of industrial and electrical devices such as: 1) An isolated 8-channel temperature monitoring system; 2) An industrial battery charger.
Sep. 2009 May 2010	**Research Engineer**, *Iran Telecommunication Research Center*, Tehran, Iran. Contributed in preparing an action plan in optical communications.
Jul. 2003 Aug. 2007	**Research Assistant**, *Shahid Beheshti University, Department of Electrical Engineering*, Tehran, Iran. Developing Optical Character Recognition (OCR) algorithms on Persian language: Automatic detection by extracting primitives (Jan. 2007 – Aug. 2007), Training a recognition system using projections of an image (Jul. 2003 – Feb. 2005).

Honors and Awards

2019	**Best Paper Award, 3rd Prize**. IEEE-BHI Conference, Chicago, Il, USA
Apr. 2019	**Mike Karuski Research Award, Finalist**. University of Wisconsin-Milwaukee, WI, USA
Apr. 2016	**GE Healthcare Research Poster Competition, 3rd Place**. University of Wisconsin-Milwaukee, WI, USA
Jan. 2016 May 2017	**Graduate Research Assistant – GE Healthcare**. University of Wisconsin-Milwaukee, WI, USA
2013 – 2017	**Dean's Fellowship**. University of Wisconsin-Milwaukee, WI, USA
2010	**Research Grant**. Iran Nano Technology Initiative Council, Tehran, Iran

Grants

Jul. 2019 Aug. 2020	**PI**, Marshfield Clinic Research Institute, $64,933. Precision Medicine Using Machine Intelligence to Predict Lung Nodules Carcinogenicity

Certificates

2019	Applied Data Science by IBM on Coursera
2020	Deep Learning by deeplearning.ai on Coursera

Technical Skills

Software Skills	Matlab, LaTeX, Weka, Code Vision, Labview, Keil, ModelSim
Programming	C, Python, R, VHDL, Verilog, and Pascal

Microcontrollers	Atmel family (including AVR and ATXmega), Z80 family
Industrial modules	GPS Module (u-blox), GSM/GPRS module (Siemens MC55), ZigBit module (Microchip MRF24J40), different types of HMIs (such as Beijer, Schneider Electric and Panel Master)

Technical Reviews

Scientific Journals	JAMIA – JMIR – MDPI – Computer Methods in Biomechanics and Biomedical Engineering: Imaging & Visualization
International Conferences	AMIA Informatics Summit (Since 2018) – IEEE EBECEGC2018 – ISVC 2020

Teaching Experience

Jan. 2015 May 2017	**Matlab Tutor**, *University of Wisconsin-Milwaukee*, USA.
Sep. 2014 Dec. 2015	**Electrical Circuits II (Lab)**, *University of Wisconsin-Milwaukee*, USA.
Jan. 2005 May 2005	**Digital Logic Circuits**, *Shahid Beheshti University*, Iran.