

# Saba Heidari Gheshlaghi

## Curriculum Vitae

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[scholar.google.com/citations?user=opapWEEAAAAAJ&hl=en](https://scholar.google.com/citations?user=opapWEEAAAAAJ&hl=en)

### Computer Science, PHD Student

I am a result-oriented data scientist with 6+ years of experience in the field of machine learning and computer vision with the focus on medical imaging. I have extensive background in development and application of supervised, semi-supervised, and unsupervised machine learning. I have superior ability to mine and analyze data, apply machine learning techniques and statistical knowledge to identify opportunities to accelerate business through innovative solutions.

### Education

- 2020–Now **Doctor of Philosophy (Ph.D.) in Computer Science**, *Marquette University*, Milwaukee, WI, USA.
- 2019–2020 **Doctor of Philosophy (Ph.D.) in Electrical Engineering**, *West Virginia University*, Morgantown, WV, USA.  
Transferred to Marquette University
- 2015–2018 **Master of Science in Electrical Engineering**, *Amirkabir University of Technology (Tehran Polytechnic)*, Tehran, Iran.
- 2010–2015 **Bachelor of Science in Electrical Engineering**, *Shahid Rajaee Teacher Training University*, Tehran, Iran.

### Work Experience

- 2022–Now **Machine Learning, Optimization and Data Lab (MODLab Lab)**, *Marquette University*, Milwaukee.  
**Graduate Research Assistant,**
- Adversarial machine learning
  - Graph signal processing/machine learning and network data analytics.
  - Robust machine learning.
- 2020–2022 **Machine Learning and Image Processing (MLIP) Lab**, *Marquette University*, Milwaukee.  
**Graduate Research Assistant,**
- Developing deep learning algorithms to predict Breast Cancer's tumor sub-type.
  - Generating synthetic medical images by building state of the art generative adversarial networks (GANs) to overcome challenges of the limited access to the medical images.
  - Developing deep learning algorithms to enhance reproductive organ segmentation for pediatric CT organ dose estimation.
  - Developing 3D deep learning models to enhance reproductive organ segmentation.
  - Knowledge of statistical and machine learning techniques such as regression analysis, clustering, decision trees, ensemble methods, convolutional neural networks (CNN), long short-term memory (LSTM), etc.
- 2019–2020 **Rockefeller Neuroscience Institute**, *West Virginia University*, Morgantown.  
**Graduate Research Assistant,**
- Design and develop a state of the art self-training model architecture for the task of segmenting the retinal layers in OCT scans.
  - Develop a super resolution generative adversarial networks (SRGANs) to overcome the challenges of the low quality and noisy images.
- 2016–2018 **Computational Intelligence and Large Scale Systems Research Lab**, *Amirkabir University of Technology*, Tehran.  
**Graduate Research Assistant,**
- Developing machine learning algorithms to detect multiple sclerosis lesions.
  - Knowledge of statistical and machine learning techniques such as fuzzy C-means, clustering, and support vector machine (SVM).

2015–2019 **Information Technology Architects Company (ITA)**, Tehran.

**Developer Engineer,**

- BMS, Intelligent Tunnel System(ITS) and SCADA are the main issues which I deal with in R&D department of the ITA co.

## Computer Skills

Programming Languages Python, MATLAB, C++

Frameworks and Toolkits OpenCV, Tensorflow, Pytorch, Sckit-learn, Torchvision, Numpy, Pandas, Matplotlib, PyTorch Geometric

Engineering Softwares PLC, Proteus, Simatic Step7

Operating Systems Linux/Unix, Windows

General Softwares Microsoft Office, AutoCAD, Photoshop, L<sup>A</sup>T<sub>E</sub>X, Pycharm

## Publications

- 2023 Chanda, Dibaloke,. Heidari Gheshlaghi, Saba,. Yahyasoltani, Nasim,. "Explainability-Based Adversarial Attack on Graphs", (submitted)
- 2023 Heidari Gheshlaghi, Saba,. Aryal, Milan,. Yahyasoltani, Nasim,. Ganji, Masoud,. "Graph and Image level adversarial attack in Digital Pathology", (submitted)
- 2023 Heidari Gheshlaghi, Saba,. Aryal, Milan,. Yahyasoltani, Nasim,. Ganji, Masoud,. "Artifact Robust Graph-Based Learning in Digital Pathology", (Submitted)
- 2023 Heidari Gheshlaghi, Saba,. Yahyasoltani, Nasim,. "Robust and transferable graph neural networks for medical images", *International Conference on Machine Learning and Applications (ICMLA 2023)*
- 2023 Heidari Gheshlaghi, Saba,. Kan, Chi Nok Enoch,. Gilat Schmidt, Taly,. Ye, Dong Hye,. "Age encoded adversarial learning for pediatric CT segmentation", (Submitted)
- 2022 To, Tyrell,. Heidari Gheshlaghi, Saba,. Ye, Dong Hye,. "Deep Learning for Breast Cancer Classification of Deep Ultraviolet Fluorescence Images toward Intra-Operative Margin Assessment", *44rd Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC 2022)*
- 2021 Heidari Gheshlaghi, Saba,. Kan, Chi Nok Enoch,. Ye, Dong Hye,. "Breast Cancer Histopathological Image Classification with Adversarial Image Synthesis", *43rd Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC 2021)*
- 2021 Dehzangi, Omid,. Heidari Gheshlaghi, Saba,. Amireskandari, Annahita,. Nasrabadi, Nasser M., and Ali, Rezai,. "OCT Image Segmentation Using Neural Architecture Search and SRGAN", *25th Int. Conf. on Pattern Recognition (ICPR'20)*
- 2020 Heidari Gheshlaghi, Saba,. Dehzangi, Omid,. Dabouei, Ali,. Amireskandari, Annahita,. Ali, Rezai,. and Nasrabadi, Nasser M., "Efficient Oct Image Segmentation Using Neural Architecture Search.", *2020 IEEE International Conference on Image Processing (ICIP)*
- 2020 Heidari Gheshlaghi, Saba,. Ranjbar, Amin,. Suratgar, AmirAbolfazl,. Menhaj, MohammadBagher,. Faraji, Fardin,. "Superpixel Segmentation of Multiple Sclerosis Lesions via Machine Learning Based Techniques", *Sharif Neuroscience Symposium, 2020*
- 2019 Ranjbar, Amin,. Heidari Gheshlaghi, Saba,. Suratgar, AmirAbolfazl,. Menhaj, MohammadBagher,. "Migraine Disease Detection using EEG Signals: a Supervised Learning Approach", *Sharif Neuroscience Symposium, 2019*
- 2018 Heidari Gheshlaghi, Saba,. Madani, Abolfazl,. Suratgar, AmirAbolfazl,. Faraji, Fardin,. "Segmentation of Multiple Sclerosis Lesion in Brain MR Images Using Fuzzy C-Means", *International Journal of Artificial Intelligence and Applications (IJAIA), 2018*

- 2018 *Heidari Gheshlaghi, Saba., Madani, Abolfazl., Suratgar, AmirAbolfazl., Faraji, Fardin., "Multiple Sclerosis Diagnosis with Fuzzy CMeans", Computer Science & Information Technology (CS & IT), 2018*

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## Publications Under Review

- 2023 *Heidari Gheshlaghi, Saba., Kan, Chi Nok Enoch., Gilat Schmidt, Taly., Ye, Dong Hye., "Age encoded adversarial learning for pediatric CT segmentation"*
- 2023 *Heidari Gheshlaghi, Saba., Aryal, Milan., Yahyasoltani, Nasim., Ganji, Masoud., "Artifact Robust Graph-Based Learning in Digital Pathology"*