

Research Experience

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|---|---------------------------|
| Deep Learning Research Lab | West Virginia University |
| • <i>Graduate Research Assistant</i> | <i>May 2020 - Present</i> |
| - Executed various SOTA deep learning generative models including various GAN models (Cycle GAN, Pix2pix, Conditional GAN, SRGAN, STARGAN) for image and time series datasets | |
| - Developed a deep active learning model for data efficient classification on image data | |
| - Developed a new model for self supervised representation learning for datasets at different scales, from CIFAR10/100 to ImageNet | |
| - Developed multiple time series analysis and modeling framework for human genome sequences, age estimation using gene expression data, age-related gene identification | |
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| Computer Vision Biometrics Research Lab | West Virginia University |
| • <i>Graduate Research</i> | <i>May 2019 - May 2020</i> |
| - Developed a GAN-based model to simultaneously perform super-resolution and domain translation on Iris image data for identification purposes. | |
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| Advance Signal Processing Research Lab | Amirkabir University of Technology |
| • <i>Graduate Research Assistant</i> | <i>Aug. 2014 - May 2019</i> |
| - Thorough investigation of time series prediction methods for non-stationary time series using Wavelet, and AR, MA, and ARIMA modeling | |
| - Developing an accurate algorithm to process human and canine EEG signals for long term prediction of epileptic seizures up to one hour prior to the seizure onset | |
| - Developing a linear-non-linear modeling algorithm for modeling highly volatile time series | |

Education

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| West Virginia University | Morgantown, WV |
| • <i>Doctor of Philosophy in Electrical Engineering [Deep/Machine Learning] CGPA: 4.0</i> | <i>May 2019 – December 2023</i> |
| - Title: Active Uncertainty Representation Learning—Learning More From Less
(Advised by Dr. Donald Adjeroh and Dr. Gianfranco Doretto) | |

Selected Publications

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- **Salman Mohamadi, Gianfranco Doretto, Donald Adjeroh:** "FUSSL: Fuzzy Uncertain Self-Supervised Learning" 2023 IEEE/CVF Winter Conference on Application of Computer Vision (**WACV 2023**), Jan. 2023
 - **Salman Mohamadi, Gianfranco Doretto, Donald Adjeroh:** "Deep Active Ensemble Sampling" 2022 IEEE/CVF Asian Conference on Computer Vision (**ACCV 2022**), Dec. 2022
 - **Moktari Mostofa, Salman Mohamadi, Nasser M Nasrabadi:** "Deep GAN-based Cross-Spectral Cross-Resolution Iris Recognition" (**IEEE Transaction 2021**)
 - **Salman Mohamadi, Donald Adjeroh:** "An Information-Theoretic Framework for Identifying Age-Related Genes Using Human Dermal Fibroblast Transcriptome Data" 2021 IEEE International Conference on Bioinformatics and Biomedicine (**BIBM 2021**)
 - **Salman Mohamadi, Gianfranco Doretto, Nasser Nasrabadi, Donald Adjeroh:** "Human Age Estimation from Gene Expression Data Using Artificial Neural Networks" 2021 IEEE International Conference on Bioinformatics and Biomedicine (**BIBM 2021**)
 - **Salman Mohamadi, Donald Adjeroh:** "A New Framework For Spatial Modeling And Synthesis of Genomic Sequences" 2020 IEEE International Conference on Bioinformatics and Biomedicine (**BIBM 2020**), 3575-3584. , 16 June, 2020
 - **Salman Mohamadi, Hamidreza Amindavar:** "ARIMA-GARCH Modeling For Epileptic Seizure Prediction" 2017 IEEE International Conference on Acoustics, Speech, and Signal Processing (**ICASSP 2017**)
 - **Salman Mohamadi, Gianfranco Doretto, Donald Adjeroh:** "More Synergy, Less Redundancy: Exploiting Joint Mutual Information for Self-Supervised Learning" Recently submitted to *ICASSP 2023*
 - **Salman Mohamadi, Gianfranco Doretto, Donald Adjeroh:** "GUESS: Generative Uncertainty Ensemble For Self-Supervision" Recently submitted

Current Research

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- Active and self-supervised visual feature learning**
 - *More robust SSL and AL models*
 - We re-consider uncertainty representation for AL and SSL models
 - Generative Models, i.e., VAE, 3D & 2D GAN**
 - *Adversarial synthesis*
 - Investigation of deep generative models that represent 3D scenes in neural radiance fields as well as 2D scenes
 - 3D model for self supervised learning

Projects/Expertise

- **Uncertainty Representation for Machine and Deep Learning:** Including Approximate Thompson Sampling for Active Learning; Uncertainty Representation for Self-Supervised Learning (SSL); Joint Mutual Information Decomposition for SSL
- **GAN Models:** Implemented various GAN models [STAR, CYCLE, VANILLA, Pix2pix, Conditional, etc] for Quality enhancement, and various image synthesis applications
- **Signal and Times Series Modeling:** Long-Term Epileptic Seizure Prediction using ARIMA models, Wavelet and etc; Modeling signals with high volatility

Leadership/ Awards

- **Supervision:** Supervised graduate and undergraduate students in research topics under Electrical Engineering and Computer Science
- **Reviewer:** IEEE Access, Neural Network (Elsevier), IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP) , IJCB conference, etc

Research Interests

- **General:** Machine Learning (ML), Deep Learning (DL), Computer Vision, and Their application with Bioinformatics
- **Specific:** Generative Models (GANs, VAEs), Uncertainty Representation in Deep Learning, Self-Supervised Learning, and Active Learning
- **Others:** Getting machines to learn **hierarchical representation of action plans** (as opposed to hierarchical representation of perception which is in part solved by deep learning)

Programming Skills

- **Platforms:** PyTorch, Tensorflow, PyCharm, TorchScript, MATLAB, Linux, Kinect-SDK
- **Languages:** Python, C#, C/C++