Humza M. Syed

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Education

Rochester Institute of Technology

M.S. in Computer Engineering
August 2019 | Cum. GPA: 4.00

B.S. in Computer Engineering
May 2019 | Cum. GPA: 3.72

Skills

Programming
Python • Algorithms
OOP • C/C++ • Tcl
HTML/CSS • SQL • LaTeX
ARM M0+ Assembly
Verilog HDL/VHDL

Software Tools
PyTorch • TensorFlow
Keras • NumPy
scikit-learn • pandas
matplotlib • OpenCV
MATLAB • Flask
Cadence • Vivado

OS
Linux • Windows

Coursework

Graduate
Deep Learning
Computer Vision
Brain-Inspired Computing
Machine Intelligence
Reconfigurable Computing

Undergraduate
Applied Programming
Computer Architecture
Interface & Digital Electronics

Awards

RIT Honors Program
RIT BS/MS Program
RIT Dean's List 2014-2019

Activities

PAX Enforcer
RIT AI Seminar Series
RIT Habitat for Humanity
Rock Climbing
Running
Traveling

RIT Neuromorphic AI Lab | Graduate Research Assistant
Jan 2018 - Aug 2019 | Rochester, NY

- Created convolutional neural networks (CNNs) in PyTorch to evaluate the impacts of fixed-random weights on network performance for the CIFAR-10, SVHN, and UC Merced Land Use datasets.
- Programmed a number of random projection neural network architectures to process the MSTAR dataset. These networks utilize random weights and the pseudoinverse operation to achieve over 95% accuracy within 30 seconds on an Nvidia Titan X.
- Exploited efficient training of echo state networks to minimize model's search complexity.

Xelic, Inc. | Hardware Engineering Intern
Jan 2017 - Aug 2017 | Pittsford, NY

- Designed a system to test various forward error correction (FEC) cores using existing IP.
- Reduced testing time by 75% using VHDL procedures for testing FEC cores.
- Verified the system's functionality through simulations in Vivado and FPGA testing.

Lockheed Martin | Hardware Engineering College Tech Spec Intern
May 2016 - Aug 2016 | Owego, NY

- Tested and debugged military-grade flight display units for fixed wing and rotary aircraft.
- Decreased testing time by 50% by effectively communicating debugging strategies and by leading senior engineering technicians to find the causes of failures.

Projects

Anime Recommender System Dec 2019 | hmsyed.com/projects/anime_rec | github.com/flarelink/Anime_Recommender_System

- Created a content based anime recommendation system that takes the cosine similarity between the genre, type (TV, OVA, etc.), and studio(s) of animes. The system then sorts the shows based off the shrinkage estimation of the scores and number of people that scored.

Flask Website Dec 2019 | hmsyed.com | github.com/flarelink/Flask_Website

- Created a portfolio website using Flask to showcase my works. The website allows users to try out the implemented projects and my posts will show up on the home page.

Face Privacy Jan 2019 | hmsyed.com/projects/face_privacy | github.com/flarelink/Background_Face_Privacy

- Utilized the YOLOv3 deep neural network and OpenCV Haar cascade classifiers to accurately detect faces in images and videos. After detection, a blur is applied over the faces to protect the privacy of people in the background of scenery photos and/or videos.

Semantic Segmentation May 2019 | github.com/flarelink/cv_project_segmentation

- Utilized two deep neural networks, Fully Convolutional Network (FCN) and SegNet, in PyTorch to perform semantic segmentation on the NYUv2 and Cityscapes datasets.

Publications | hmsyed.com/publications

- "Towards Near Real-Time Training with Semi-Random Deep Neural Networks and Tensor-Train Decomposition", *IEEE Transactions on Aerospace and Electronic Systems*, 2019.
- "Performance Analysis of Fixed-Random Weights in Artificial Neural Networks", Master's Thesis, Department of Computer Engineering, RIT, 2019.
- "Semi-Random Deep Neural Networks for Near Real-Time Target Classification", *Proceedings of the SPIE 10987, Algorithms for Synthetic Aperture Radar Imagery XXVI*, Baltimore, MD, 2019.
- "Exploiting Randomness in Deep Learning Algorithms", *Proceedings of the 2019 International Joint Conference on Neural Networks (IJCNN)*, Budapest, Hungary, 2019.
- "Analysis of Wide and Deep Echo State Networks for Multiscale Spatiotemporal Time Series Forecasting", *ACM International Conference Proceedings Series (ICPS) of the Neuro Inspired Computational Elements (NICE) Workshop*, Albany, NY, 2019.
- "Mod-DeepESN: Modular Deep Echo State Network", *Annual Conference on Cognitive Computational Neuroscience*, Philadelphia, PA, 2018.