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

Experience

RIT Neuromorphic AI Lab | Graduate Research Assistant
Jan 2018 - Aug 2019 | Rochester, NY
- Created convolutional neural networks (CNNs) in PyTorch to test fixed-random weights and their impacts 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 by utilizing 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.

Publications
- **H. Syed**, R. Bryla, Uttam Kumar Majumder, D. Kudithipudi, "**Towards Near Real-Time Training with Semi-Random Deep Neural Networks and Tensor-Train Decomposition**," *IEEE Transactions on Aerospace and Electronic Systems*, Forthcoming 2019.
- **H. Syed**, "**Performance Analysis of Fixed-Random Weights in Artificial Neural Networks**," Master's Thesis, Department of Computer Engineering, RIT, Forthcoming 2019.
- **H. Syed**, R. Bryla, Uttam Kumar Majumder, D. Kudithipudi, "**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. spie.org/Publications/Proceedings/Paper/10.1117/12.2520237
- H. F. Langroudi, C. Merkel, **H. Syed**, D. Kudithipudi, "**Exploiting Randomness in Deep Learning Algorithms**," *Proceedings of the 2019 International Joint Conference on Neural Networks (IJCNN)*, Budapest, Hungary, 2019. ieeexplore.ieee.org/abstract/document/8852192
- Z. Carmichael, **H. Syed**, D. Kudithipudi, "**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. arxiv.org/abs/1908.08380
- Z. Carmichael, **H. Syed**, S. Burtner, D. Kudithipudi, "**Mod-DeepESN: Modular Deep Echo State Network**," *Annual Conference on Cognitive Computational Neuroscience*, Philadelphia, PA, 2018. arxiv.org/abs/1808.00523

Projects

Face Privacy Jan 2019 | github.com/flarelink/Background_Face_Privacy
- Utilized the YOLOv3 algorithm and OpenCV Haar cascade classifiers to accurately detect faces in images and videos. After detection, a blur is applied over the faces to ensure the privacy of people in the background of scenery photos and/or videos.

Neural Art Oct 2018 | github.com/flarelink/PyTorch_Neural_Art
- Utilized neural style transfer to create art in PyTorch. The program takes input content and style images and applies the style image's art onto the content image to make a new image.