

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

Software Tools

PyTorch • TensorFlow
Keras • NumPy
scikit-learn • OpenCV
MATLAB • Vivado
Cadence

OS

Linux • Windows

Coursework

Graduate

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

Undergraduate

Applied Programming
Computer Architecture
Interface & Digital
Electronics

Activities

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

Awards

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

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, Forthcoming 2019.
- 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, Forthcoming 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.