Nahian Siddique

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EDUCATION

Master of Science in Electrical and Computer Engineering Summer 2021
Purdue University Northwest
- 4.00/4.00 GPA
- Thesis title: U-net based deep learning architectures for object segmentation in biomedical images.
- Advisors: Prof. Vijay Devabhaktuni, Prof. Sidike Paheding

GRE Quantitative: 169/170 Verbal: 158/170 Analytical Writing: 3.5/6 2018

Bachelor of Science in Electrical and Electronic Engineering 2017
Islamic University of Technology, Bangladesh (IUT)
- 3.37/4.00 GPA

RESEARCH INTERESTS

Artificial Intelligence, Computer Vision, Deep Learning

RESEARCH EXPERIENCE

Master's Research Spring 2020 – Summer 2021
Purdue University Northwest
- Conducted an extensive literature review of over 300 deep learning applications in biomedical imaging from recent publications.
- Led the development of U-net deep learning models for semantic segmentation applications.
- Identified objects of interest with state-of-the-art results from retinal fundus and Dermoscopy image data.

Research Assistant Fall 2020 – Spring 2021
Purdue University Northwest
- Collaborated and coordinated with faculty across Purdue Northwest and the University of Arizona, Department of Environmental Science.
- Contributed to a multi-disciplinary project to develop ML models for detecting soil properties from remotely sensed multispectral images.
- Applied time series analysis and RNNs to forecast soil moisture levels on the ground from historical data.

TEACHING EXPERIENCE

Teaching Assistant, Purdue University Northwest
Electronic Measurements lab Spring 2020, Spring 2021, Summer 2021
Signals and Systems lab Summer 2021
- Instructed and supervised 20-30 sophomore and junior year students in lab sessions.
- Created lesson plans, lab manuals, and examinations working in close collaboration with corresponding course professors.
- Delivered one-on-one assistance to students during practical sessions and hands-on demonstrations.

PUBLICATIONS

[1] E. Babaeian, S. Paheding, **N. Siddique**, V. K. Devabhaktuni, and M. Tuller, "Estimation of root zone soil moisture from ground and remotely sensed soil information with multisensor data fusion and automated machine learning," Remote Sensing of Environment, vol. 260, Jul. 2021, Art. no. 112434.

[2] **N. Siddique**, S. Paheding, C. Elkin, and V. K. Devabhaktuni, "U-Net and its variants for medical image segmentation: A review of theory and applications," IEEE Access, vol. 9, pp. 82031–82057, Jun. 2021.

CONFERENCES

[1] E. Babaeian, S. Paheding, **N. Siddique**, V. K. Devabhaktuni, and M. Tuller, "Application of long short-term memory deep learning for forecasting of evapotranspiration from ground and satellite observations," in Proc. ASA-CSSA-SSSA International Annual Meeting, Nov. 2021.

[2] **N. Siddique**, S. Paheding, M. Z. Alom, and V. K. Devabhaktuni, "Recurrent residual U-Net with EfficientNet encoder for medical image segmentation," in Proc. SPIE 11735, Pattern Recognition and Tracking XXXII, 117350L, Apr. 2021.

[3] E. Babaeian, S. Paheding, **N. Siddique**, V. K. Devabhaktuni, and M. Tuller, "Application of deep learning for regional evapotranspiration projections based on satellite and weather observations," poster presented at AGU Fall Meeting, Dec. 2020.

[4] E. Babaeian, S. Paheding, **N. Siddique**, V. K. Devabhaktuni, and M. Tuller, "Root zone moisture retrievals from ground and remotely sensed soil data with AutoML," poster presented at ASA-CSSA-SSSA International Annual Meeting, Nov. 2020.

[5] M. F. Adnan, M. A. Ihsan, **N. Siddique**, I.-U. Islam, and R. H. Sagor, "Design of surface plasmon ring resonator based label-free biosensors," in Proc. 2018 International Conference on Computer, Communication, Chemical, Material and Electronic Engineering (IC4ME2), Sep. 2018.

AWARDS

Promising Innovator, Bangladesh Ministry of Power, Energy and Minerals, Green Energy Challenge. 2017
- Awarded to top 10 projects among 1000+ candidates nationwide.

1st Prize, IUT Intervarsity Technology Festival, Project Showcasing 2015
- Placed 1st among 200 competitors from national universities.

PROFESSIONAL EXPERIENCE

Software Engineer 2018
Synchronous, Bangladesh
- Designed and optimized video broadcast management system to deployment.
- Implemented multiplatform interfacing using React and React Native.
- Identified incompatibility issues and documented system performance.

AFFILIATIONS & LEADERSHIP

IEEE 2019 – 2021
- Graduate Student Member
- Member, PNW Student Chapter

Purdue University Northwest AI Club 2020 – 2021
- Founding member and Vice president

IUT Debating Society 2014 – 2017
- Member of organizing committee for intervarsity events

TECHNICAL SKILLS

Programming Languages: Python, MATLAB, R, C++, SQL, JavaScript
ML Libraries: Keras, TensorFlow, PyTorch, Scikit-Learn, Pandas, Matplotlib
Software and Tools: AWS, GCP, Git, Tableau, Apache Hadoop

CERTIFICATIONS

DeepLearning.AI Generative Adversarial Networks (GANs) Specialization, Coursera Nov. 2021
DeepLearning.AI TensorFlow Developer Specialization, Coursera Sep. 2021

REFERENCES

Vijay Devabhaktuni, Professor and Chair
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University of Maine
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Sidike Paheding, Assistant Professor
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