Nahian Siddique

nahiansiddique10@gmail.com (219) 308-6658
linkedin.com/in/nahian-siddique/ nahiansiddique.com

EDUCATION

M.S. in Electrical and Computer Engineering
Purdue University, IN, USA *Aug 2019 – Aug 2021*
- **4.00/4.00 GPA**
- **Thesis**: U-net based deep learning architectures for object segmentation in biomedical images.
- **Relevant courses**: Machine Learning, Big Data, Neural Networks, Applied Statistics

B.S. in Electrical and Electronics Engineering
Islamic University of Technology, Bangladesh *Jan 2014 – Nov 2017*

WORK EXPERIENCE

Graduate Teaching Assistant | Purdue University, IN, USA *Jan 2020 – Aug 2021*
- Instructed over 30 undergraduate students for Electronic Measurements lab and Signals and Systems lab.
- Created lesson plans, lab manuals, and assignments working in close collaboration with course professors.
- Delivered one-on-one assistance to students during practical sessions and hands-on demonstrations.

Graduate Research Assistant | Purdue University, IN, USA *Aug 2020 – May 2021*
- Conducted an extensive literature review of 300+ deep learning applications in biomedical imaging.
- Facilitated the design of novel deep learning models for ongoing research in medical image analysis.
- Led the development of deep learning algorithms to predict soil properties using automated machine learning and time series analysis on remotely sensed data.

Junior Programmer | Synchronous, Bangladesh *May 2018 – Aug 2018*
- Designed and optimized video broadcast management system to deployment.
- Implemented multiplatform interfacing using React and React Native.
- Identified incompatibility issues and documented system performance.

SKILLS

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

PROJECTS

Biomedical Image Segmentation – Master's thesis project | Python (Keras, TensorFlow)
- Developed an image segmentation algorithm using U-net based convolutional neural networks.
- Produced state-of-the-art performance on retinal fundus and Dermoscopy image datasets.
- Presented project results at a top conference.

Soil Moisture Prediction – Research project | Python (Keras, AutoML)
- Modeled an artificial neural network to detect soil moisture levels from UAV images.
- Implemented an LSTM model to forecast soil moisture levels from historical data.
- Published research findings at a reputed journal.

Generative Adversarial Network – Machine learning course project | Python (Keras)
- Built a generative adversarial network (GAN) to synthesize images of handwritten characters and vehicles.
- Streamlined network for easy modification to train and produce images of different objects.

Swarm Intelligence for Data Clustering – Big data course project | Python, MATLAB, C
- Programmed a chemical reaction inspired swarm optimization for enhanced K-means clustering.
- Deployed and tested the algorithm on AWS for large-scale data clustering.

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.

[3] **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.