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Moh Sabbir Saadat

Ph.D. student - Computer Engineering
University of South Carolina

Highlights

✧ Develop wireless-enabled **Computer Vision** and **Imaging** systems
✧ Applied **Machine Learning, Artificial Intelligence, Signal Processing,** and **Image Processing**
✧ Advanced skills in coding and software development in **Python, MATLAB, C/C++,** and **Java**

Experience

Graduate Research/Teaching Assistant — **January, 2019 — Present**
SyReX Lab - University of South Carolina — *Columbia, SC - USA*

- Explored the potential of wireless signal to achieve fine-grained perception and imaging
  (9 publications, 1 patent)
- Collaborative research, presentation and visualization of outcomes, planning, and team-building
- Assisted a 400+ level class on computer networks with 100+ students
  (Socket programming with Java, Python, and C)

Executive Engineer — **October, 2016 — November, 2018**
Siemens Healthcare Limited — *Dhaka, Bangladesh*

- Oversaw the technical requirements of potential clients
- Built liaison between engineering department and existing clientele

Education

Ph.D. in Computer Engineering, *University of South Carolina* — **October, 2024** (tentative)
B.Sc. in Electrical & Electronic Engineering, *Bangladesh University of Engineering & Technology* — **March, 2016**

Skills

Programming languages	Python, Matlab, C/C++, Java, HTML
Software libraries	TensorFlow, PyTorch, Keras, OpenCV, ROS
Deep learning models	Graph Networks, Vision Transformer, GAN, ResNet, Auto-encoder, LSTM
Tools	Git, LaTeX, Gnuplot, Inkscape, Onshape
Operating System	Linux, Windows

Projects

❒ **Multi-sensor fusion for contactless posture asymmetry scoring**

➔ Multi-sensor prototype based on **MATLAB** and **Python**
(4k camera, depth sensor, wireless signal etc.)
➔ Processing **3D skeletal structure, 2D images, audio signal, wireless reflections** etc.
➔ Sensors complement each other and capture **2D+3D intelligence**
➔ Use **Machine learning** and **Signal processing** to map this intelligence to meaningful **posture asymmetry** score

❒ **Co-existence of human-activity sensing on indoor networking system**

➔ **Graph neural network** pipeline to overcome low-rate sensing signal due to co-existing networking
➔ **Graph** and **Recurrent neural network (LSTM)** to estimate **3D posture** sequence of human body
➔ Exploring **Vision Transformer** to develop an end-to-end system

❒ **Imaging hidden objects with hand-held millimeter-wave devices**

➔ Overcome sparse sampling and motion non-linearity with a set of **signal processing** methods
*(**compressed sensing, unsupervised clustering** etc.)*
➔ Collaborated to further improve imaging quality through **cGAN-based image super-resolution**

❒ **Traffic sign classification under challenging lighting conditions**

➔ Trained and tested a **LeNet-5** and **VGG-9** models on three benchmark datasets
➔ Converted the models to **Spiking neural networks**, and compared on the same benchmarks