

Md Tanvirul Alam

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Research Interests

Deep Learning, Computer Vision, Natural Language Processing, Unsupervised Learning, Explainable AI

Education

Bangladesh University of Engineering & Technology

Dhaka, Bangladesh

B.Sc in Electrical and Electronics Engineering

2016

Publications

- [1] **T. Alam** and A. Khan, “Lightweight CNN for Robust Voice Activity Detection,” in *International Conference on Speech and Computer (SPECOM)*. Springer, 2020, pp. 1–12. [DOI]
- [2] **T. Alam**, A. Khan, and F. Alam, “Punctuation Restoration using Transformer Models for High-and Low-Resource Languages,” in *Proceedings of the 6th Workshop on Noisy User-generated Text (W-NUT 2020)@EMNLP*. 2020. [PDF]
- [3] F. Alam, F. Ofli, M. Imran, **T. Alam**, and U. Qazi, “Social Media Image Classification Benchmarks for Various Disaster Response Tasks,” in *2020 IEEE/ACM International Conference on Advances in Social Networks Analysis and Mining (ASONAM)*. IEEE, 2020
- [4] [Under Review] **T. Alam**, A. Khan, and F. Alam, “Bangla Text Classification using Transformers,” in *International Conference of Computer and Information Technology (ICCIT)*. IEEE, 2020.

Professional Experience

Senior Software Engineer (AI), **BJIT Limited**

May 2018 - present

Deep Learning Researcher, **Semion Limited**

December 2016 - April 2018

Selected Professional Projects

SemInfer[2017]: Desktop Application to Run Inference on Captured Screenshot(C++)

- Developed a dependency free deep neural net inference library using C++
- Supported layers: Conv, Pool, Dense, Batch Norm, Activation, NMS, RoI Pool, Depthwise, LRP
- Added data parallelism support with OpenMP and SIMD (SSE, AVX) instructions
- Implemented CNN models (VGG, ResNet, DenseNet, MobileNet, Faster RCNN etc.) in C++

Machine Log Data Analysis for Fault Prediction [2017] (C++, Python)

- Trained DNN model for fault prediction from log history
- Implemented layer-wise relevant propagation to identify trigger phrases for future fault

SemRad: A Teleradiology Solution[2018] (Java, JavaFX)

- Developed client app for radiologist to communicate with server and report studies
- Implemented drawing and image analysis tools for assisting radiologists

DNN Based Web Filtering Application for Windows [2018] (C++, Python)

- Trained a multilingual (English and Japanese) text based website classification model using CNN
- Developed a windows app using C++ for monitoring and controlling outbound traffics

Voice Activity Detection using CNN [2019] (Python, Android)

- Designed and trained a lightweight CNN model for voice activity detection on Android

POC on Level Crossing Safety using Deep Learning [2019] (C++, .NET)

- Developed a POC for detecting and tracking pedestrian and vehicles near level crossing
- Applied heuristics to identify potentially dangerous situations
- Selected as the best POC among multiple competitors by Japan Railways Group

Facial Attribute Recognition and Rendering on 3D Avatar [2019] (python)

- Defined data collection strategy for mapping facial expression to 3D model
- Trained ML model combining geometric and appearance features

Pedestrian Attributes Recognition [2020] (Python, C++)

- Developed a unified pedestrian attributes recognition application
- Supported features: pose estimation, gender detection, face blurring, smartphone usage detection

Selected Academic Projects

- Pedestrian Detection using Wavelet Transformed HOG features *B. Sc. Thesis*
- Vehicle Number Plate Recognition and Speed Estimation (MATLAB, C) *Microprocessor Lab*
- Pitch Estimation using Cepstral Analysis (MATLAB) *Digital Signal Processing Lab*
- Employee Attendance Management System (C#) *Numerical Methods Lab*
- Item Sorting Based on Weight (Microcontroller) *Control System Lab*
- MinMax Algorithm for Prey and Predator Behavior Simulation (MATLAB) *Numerical Technique Lab*

Computer Skills

Programming Languages	C++, Python, Java, MATLAB, C#
Deep Learning Frameworks	PyTorch, TensorFlow, Keras, OpenVINO
Python Packages	NumPy, Pandas, Scikit-learn, OpenCV, Matplotlib, Pandas
IDEs	Visual Studio, PyCharm, Jupyter Notebook, Android Studio
Other Expertise	Git, Latex, Gerrit, Redmine, Proteus, PSpice

Accomplishments

Paper Presentation	SPECOM, 2020 (Virtual)
Reviewer	6th Workshop on Noisy User-generated Text (W-NUT), 2020
Programming Contests	Advanced to Round 2 in Google Code Jam 2016(Top 7% globally) Top 10 in country rank in TopCoder
AI contest	Finalist in Russian AI Cup 2016 — CodeWizards
Training	Worked as the lead instructor in AI training organized by LICT, BCC Conducted a two week long training in Thailand on introductory DL
Employment	Awarded employee of the year in Fintech & AI department in 2020
Scholarships	Admission Test Excellency Scholarship, BUET, 2011 Education Board Scholarship, Government of Bangladesh, 2008 & 2010 Primary & Junior Scholarship, Government of Bangladesh, 2002 & 2006