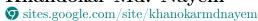
Khandokar Md. Navem



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Computer science Ph.D. student doing research on machine learning and deep network architectures on speech applications. Experienced in working on speech recognition, natural language processing (NLP), computer vision along around 4 years of experience in the software industry, and academia.

EMPLOYMENT

Indiana University, Bloomington, IN, Research Assistant, Lab ASPIRE

Fall 2016 - Present

- Researched noise cancellation techniques to filter out wide-range of noises from human speech using noise masking approach by applying deep neural network models. (Matlab, Python, and DNN, RNN, LSTM, GAN)
- Formulated prediction models to detect gestational preeclampsia and gestational hyper-tension among nulliparous pregnant women. (Python, Random forest, DNN)
- Investigated human emotion detection techniques in speech using deep neural models. (CNN, RNN)

BOSE Corporation, Boston, MA, Machine Learning/Neural Signal Processing Intern

Summer 2020

• Researched on speech enhancement and speech separation problem to deploy better sound quality to hearing aid and voice-assistive wearable devices. (Python, TensorFlow)

REVE Systems, Dhaka, Jr. Software Engineer, Team Media Gateway

January 2015

 Programmed media gateway controller to facilitate both calls and faxes between the telephone network and VoIP network or another telephone network. Also designed front-end panel for VoIP administrators and customers for easy use. (Backend: protocol megaco 1.0, java; front-end: .jsp framework, JavaScript, Ajax and MySQL).

PUBLICATIONS

- Khandokar Md. Nayem, Donald Williamson, "Monaural speech enhancement using intra-spectral recurrent layers in the magnitude and phase responses", in Proc. ICASSP 2020. (pdf, video)
- Khandokar Md. Nayem, Donald Williamson, "Incorporating Intra-Spectral Dependencies with a Recurrent Output Layer for Improved Speech Enhancement", in Proc. MLSP 2019. (pdf)
- Shujon Naha, Khandokar Md. Nayem, Md. Lisul Islam, "RSGAN: Recurrent Stacked Generative Adversarial Network for Conditional Video Generation", poster presented at IU computer vision project showcase, 2017.

EDUCATION

Ph.D. in Computer Science, researcher in machine learning on speech

May 2021 (Anticipated)

Indiana University, Bloomington, IN

Minor in Cognitive Science

Advisor: Prof. Donald S. Willamson

M.Sc. in Computer Science,

Indiana University, Bloomington, IN

December 2019

B.Sc. in Computer Science & Engineering (CSE), major artificial intelligence Bangladesh University of Engineering & Technology (BUET), Dhaka, Bangladesh

July 2014

PROGRAMMING SKILLS

Languages Frameworks & Libraries Machine Learning

Python, C++, Matlab, C, Java, C#, R, SQL, Assembly, Shell Script, LATEX TensorFlow, Keras, NLTK, CImg, Cmake, Git, OpenCV, OpenGL, Android Regression, Clustering, Decision Tree, Ensemble Methods, Naive Bayes, SVM, HMM,

GMM, DNN, Autoendoer, CNN, RNN, LSTM, CRNN, GAN

SELECTED PROJECTS

- Recurrent Stacked Generative Adversarial Network (RSGAN) generates video clips based on a pre-condition like sentence description, action classes, or fMRI signals using a novel deep architecture. (StackGAN, Python, TensorFlow)
- Automatic classification of rhetorical questions with stress detection using Recurrent Neural Network (RNN) and Convolutional Recurrent Neural Network (CRNN) models. (Python, Keras, NLTK)
- An end-to-end speech recognition system with bidirectional recurrent neural network architecture without any frame by frame labelling. (Connectionist Temporal Classification (CTC), CRNN, Python, Keras, NLTK)
- Image Matching to match images that are taken from different viewpoints of the same object; detect object like car from aerial snapshot; create a panoramic image stitching multiple images. (C++, CImq, $OverFeat\ packages$)