

DR. NABEEL MOHAMMED [NBM]

Associate Professor

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Biography

Dr. Nabeel Mohammed completed his Bachelors in Computer Science from Monash University Australia. Following that he worked as a Software Developer for Editure Ltd, a Melbourne based Software Firm specializing in providing software solutions for K-12 schools. After three and half years in that role he moved back into academia to complete his PhD at Monash University, Australia, where he worked in the area of unsupervised image feature extraction and its application to content-based image retrieval. His current research interests lie in the area of computer vision and natural language processing. He is very enthusiastic about collaborating with industry partners and has had successful collaborations with Apurba Technologies, HeadBlocks, Giga Tech Ltd., AlterSense, Gaze Technologies and others. He also leads the Apurba-NSU R&D Lab that has contributed to multiple AI related projects of Apurba Technologies.

Research Areas

- Artificial Intelligence & Robotics
- Signals and Image Processing

Research Interests

Computer Vision, Natural Language Processing, Generative AI

Teaching

- CSE 327 Software Engineering
- CSE 325/CSE 425 Concepts of Programming Language
- CSE 465 Pattern Recognition and Neural Network

Selected Publications

Journals

- Koushik Roy, Md Sazzad Hossain, Pritom Kumar Saha, Shadman Rohan, Imranul Ashrafi, Ifty Mohammad Rezwan, Fuad Rahman, BM Mainul Hossain, Ahmedul Kabir, Nabeel Mohammed, "A multifaceted evaluation of representation of graphemes for practically effective Bangla OCR," International Journal on Document Analysis and Recognition (IJDAR), 2023
- Kazi Rafat, Sadia Islam, Abdullah Al Mahfug, Md. Ismail Hossain, Fuad Rahman, Sifat Momen, Shafin Rahman, Nabeel Mohammed, "Mitigating carbon footprint for knowledge distillation based deep learning model compression," PLOS ONE, 2023
- Md Sahadul Hasan Arian, Md Tahmid Ahmed Rakib, Samira Ali, Saif Ahmed, Taseef Hasan Farook, Nabeel Mohammed, James Dudley, "Pseudo labelling workflow, margin losses, hard triplet mining, and PENViT backbone for explainable age and biological gender estimation using dental panoramic radiographs," SN Applied Sciences, 2023
- Md. Saiful Islam, Shuvo Jyoti Das, Md. Riajul Alam Khan, Sifat Momen, Nabeel Mohammed, "Detection of COVID-19 and Pneumonia Using Deep Convolutional Neural Network," Computer Systems Science and Engineering, 2023
- Md Shakib Khan, Kazi Nabiul Alam, Abdur Rab Dhrubaa, Hasib Zunair, Nabeel Mohammed, "Knowledge distillation approach towards melanoma detection," Computers in Biology and Medicine, 2022
- Samiya Kabir Youme, Towsif Alam Chowdhury, Hossain Ahamed, Md. Sayeed Abid, Labib Chowdhury, Nabeel Mohammed, "Generalization of Bangla Sign Language Recognition Using Angular Loss Functions," IEEE Access, 2021
- Koushik Roy, Md. Hasan, Labiba Rupty, Md. Sourave Hossain, Shirshajit Sengupta, Shehzad Noor Taus, Nabeel Mohammed, "Bi-FPNFAS: Bi-Directional Feature Pyramid Network for Pixel-Wise Face Anti-Spoofing by Leveraging Fourier Spectra," Sensors, 2021

- Labib Chowdhury, Hasib Zunair, Nabeel Mohammed, “Robust Deep Speaker Recognition: Learning Latent Representation with Joint Angular Margin Loss,” Applied Sciences, 2020
 - K.M. Faizullah Fuhad, Jannat Ferdousey Tuba, Md. Rabiul Ali Sarker, Sifat Momen, Nabeel Mohammed, Tanzilur Rahman, “Deep Learning Based Automatic Malaria Parasite Detection from Blood Smear and its Smartphone Based Application,” Diagnostics, 2020
 - Imranul Ashrafi, Muntasir Mohammad, Arani Shawkat Mauree, Galib Md. Azraf Nijhum, Redwanul Karim, Nabeel Mohammed, Sifat Momen, “Banner: A Cost-Sensitive Contextualized Model for Bangla Named Entity Recognition,” IEEE Access, 2020
 - Matiur Rahman, Nabeel Mohammed, Nafees Mansoor, Sifat Momen, “Chittron: An Automatic Bangla Image Captioning System,” Procedia Computer Science, 2019
 - Mithun Biswas, Gautam Kumar Shom, Rafiqul Islam, Md. Shopon, Nabeel Mohammed, Sifat Momen, Anowarul Abedin, “BanglaLekha-Isolated: A multi-purpose comprehensive dataset of Handwritten Bangla Isolated characters,” Data in Brief, 2017
 - Tasnim Sami, Nabeel Mohammed, Sifat Momen, “Learning “initial feature weights” for CBIR using query augmentation,” International Journal of Multimedia Information Retrieval, 2016
- Conference Papers
- Amrijit Biswas, Md. Ismail Hossain, M M Lutfe Elahi, Ali Cheraghian, Fuad Rahman, Nabeel Mohammed, Shafin Rahman, “3D Point Cloud Network Pruning: When Some Weights Do not Matter,” British Machine Vision Conference (BMVC), 2024
 - Muhammad Rafsan Kabir, Rafeed Mohammad Sultan, Ihsanul Haque Asif, Jawad Ibn Ahad, Fuad Rahman, Mohammad Ruhul Amin, Nabeel Mohammed, Shafin Rahman, “Beyond Labels: Aligning Large Language Models with Human-like Reasoning,” International Conference on Pattern Recognition (ICPR), 2024
 - Sadia Afrin, Md. Shahad Mahmud Chowdhury, Md. Ekramul Islam, Faisal Ahamed Khan,

Labib Imam Chowdhury, Md. Motahar Mahtab, Nazifa Nuha Chowdhury, Massud Forkan, Neelima Kundu, Hakim Arif, Mohammad Mamun Or Rashid, Mohammad Ruhul Amin, Nabeel Mohammed, "BanLemma: A Word Formation Dependent Rule and Dictionary Based Bangla Lemmatizer," Findings of EMNLP, 2023

- Md Ekramul Islam, Labib Chowdhury, Faisal Ahamed Khan, Shazzad Hossain, Md Sourave Hossain, Mohammad Mamun Or Rashid, Nabeel Mohammed, Mohammad Ruhul Amin, "SentiGOLD: A large bangla gold standard multi-domain sentiment analysis dataset and its evaluation," Proceedings of the 29th ACM SIGKDD Conference on Knowledge Discovery and Data Mining (KDD), 2023

- Md. Tahrim Tushar, Yan Yang, Md Zakir Hossain, Sheikh Motahar Naim, Nabeel Mohammed, Shafin Rahman, "Less is More: Facial Landmarks can Recognize a Spontaneous Smile," British Machine Vision Conference (BMVC), 2022

- Md Shihab, Istiak Hossain, Nazia Tasnim, Hasib Zunair, Labiba Kanij Rupty, Nabeel Mohammed, "VISTA: Vision transformer enhanced by U-Net and image colorfulness frame filtration for automatic retail checkout," Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition (Workshop), 2022

- Md Hasan, Koushik Roy, Labiba Kanij Rupty Rupty, Md. Sourave Hossain, Shirshajit Sen Gupta, Tous Noor, Nabeel Mohammed, "MHASAN: Multi-Head Angular Self Attention Network for Spoof Detection," International Conference on Pattern Recognition (ICPR), 2022

- Md Hossain, Mohammed Rakib, Sabbir Mollah, Fuad Rahman, Nabeel Mohammed, "LILA BOTI: Leveraging Isolated Letter Accumulations By Ordering Teacher Insights for Bangla Handwriting Recognition," International Conference on Pattern Recognition (ICPR), 2022

Nabeel

- Md Sazzad Hossain, Pritom Saha, Townim Faisal Chowdhury, Shafin Rahman, Fuad Rahman,

Mohammed, "Rethinking

Task-Incremental

Baselines,” International Conference on Pattern Recognition (ICPR) , 2022

Learning

- Md. Sourave Hossain, Labiba Rupty, Koushik Roy, Md Hasan, Shirshajit Sen Gupta, Nabeel

Mohammed, “A-DeepPixBis: Attentional Angular Margin for Face Anti

Spoofing,” Digital Image Computing: Techniques and Applications (DICTA), 2020

- Ifty Mohammad Rezwan, Mirza Belal Ahmed, Shazzad Sakim Sourav, Ezab Quader, Arafat

Hossain, Nabeel Mohammed, “MixCaps: Capsules With Iteration Free Routing,” Digital

Image Computing: Techniques and Applications (DICTA), 2020

- Koushik Roy, Md Hasan, K M Faizullah Fuhad, Nabeel Mohammed, A K M Shahariar Azad

Rabby, Nazmul Hasan, Jebun Nahar, Fuad Rahman, “Bangla Part of Speech Tagging

Using Contextual Embeddings and Oversampling Techniques,” Future Technologies

Conference (FTC), 2020

- Hasib Zunair, Aimon Rahman, Nabeel Mohammed, Joseph Paul Cohen, “Uniformizing

Techniques to Process CT Scans with 3D CNNs for Tuberculosis

Prediction,” International Workshop on PRedictive Intelligence In MEdicine, 2020

- Pias Paul, Moh. Anwar-Ul-Azim Bhuiya, Md. Ayat Ullah, Molla Nazmus Saqib, Nabeel

Mohammed, Sifat Momen, “A Modern Approach for Sign Language Interpretation

Using Convolutional Neural Network,” Pacific Rim International Conference on Artificial

Intelligence , 2019

- Md Shopon, Nabeel Mohammed, Md Anowarul Abedin, “Bangla handwritten digit

recognition

using

autoencoder

and

deep

convolutional

network,” International Workshop on Computational Intelligence , 2016

neural

- S.M.A. Sharif, Nabeel Mohammed, Nafees Mansoor, Sifat Momen, “A hybrid deep model

with HOG features for Bangla handwritten numeral classification,” 9th International Conference on Electrical and Computer Engineering (ICECE-2016, IEEE), 2016

- Asif Hassan, Mohammad Rashedul Amin, Abul Kalam Al Azad, Nabeel

Mohammed, “Sentiment analysis on Bangla and Romanized Bangla text using deep recurrent models,” International Workshop on Computational Intelligence, 2016

- Mithun Biswas, Rafiqul Islam, Gautam Kumar Shom, Nabeel Mohammed, Sifat Momen, Nafees Mansoor, Anowarul Abedin, “Application of image retrieval for aesthetic evaluation and improvement suggestion of isolated Bangla handwritten characters,” IEEE International Conference on Signal and Image Processing Applications (ICSIPA), 2017 , 2017

- Shimul Hassan, Nabeel Mohammed, Sifat Momen, “Learning from Tagore,” International Workshop on Computational Intelligence (IWCI-2016, IEEE), 2016

Book Chapters

- S.M.A. Sharif, Nabeel Mohammed, Sifat Momen and Nafees Mansoor, “Classification of Bangla compound characters using a HOG-CNN hybrid model,” Second International Conference on Computing and Communication Systems (I3CS – 2016, Springer), 2016

Research Projects & Grants

1. “A teaching aid for Bangla Handwriting”, Funded by ICT Division, Ministry of ICT, Bangladesh (2016 – 2017)
2. “MasterMoshai: An Artificially Intelligent Educational Tool to Automate the Evaluation of a Student’s Understanding on a Bangla Passage”, Funded by ICT Division, Ministry of ICT, Bangladesh (2019 – 2020)
3. Apurba-NSU R&D Lab – A R&D Lab at NSU funded by Apurba Technologies.

Professional Activity

- Member of AI Connect (A program of the Atlantic Council GeoTech Center and U.S. Department of State)
- Juror of Bangladesh Block Chain Olympiad
- Judge of “AI For Bangla”