Shovan Bhowmik

Thakurpara, Cumilla-3500, Bangladesh

Shovan Bhowmik | shovan@baiust.edu.bd | Shovan5795 | +8801676-892449 | Shovan_Bhowmik

RESEARCH INTEREST

- Machine Learning; Data Mining; Natural Language Processing; Signal Processing; Computer Vision;

EDUCATION

- **Khulna University of Engineering & Technology (KUET)** **Khulna-9203, Bangladesh**
  Bachelor of Science in Computer Science and Engineering *Apr 2015 - Feb 2019*
  CGPA- 3.54/4.00
  Class Position: ***11th*** *out of 55 Students*

PUBLICATIONS

Accepted

Selective Peer-Reviewed Conferences ***(Selective presentation slides can be found here)***

- **S. Bhowmik**, M. Hasan, M. A. Hakim, "A Dimensionality Reduction based Efficient Multiple Voice Disease Recognition Scheme using Mel-Frequency Cepstral Coefficients and K-Nearest Neighbors Algorithm", *International Conference on Big Data, IoT and Machine Learning (BIM 2021)*, *Lecture Notes on Data Engineering and Communications Technologies, Springer*, 23-25 September, 2021.
- **S. Bhowmik**, S. Sultana, A. Sajid, S. Reno, "Robust Multi-Domain Descriptive Text Classification Leveraging Conventional and Hybrid Deep Learning Models", *International Conference on Computing and Technological Solutions with Artificial Intelligence (ICCTSAI 2021)*, *Lecture Notes in Electrical Engineering, Springer*, 23-25 April, 2021.

Published ***(All the published articles can be found here)***

Selective Peer-Reviewed Conferences

- **S. Bhowmik**, S.Reno, S. Sultana, M. Ahmed, "Clusterization of Different Vulnerable Countries for Immigrants Due to Covid-19 Using Mean Probabilistic Likelihood Score and Unsupervised Mining Algorithms", *2021 International Conference on Information and Communication Technology for Sustainable Development (ICICT4SD)*, *IEEE*, pp. 285-290, 2021, doi: 10.1109/ICICT4SD50815.2021.9396950.
- **S. Bhowmik**, P.R.K. Prosun, K.S. Alam, "A Novel Three-Level Voting Model for Detecting Misleading Information on COVID-19", *6th International Conference On Emerging Applications Of Information Technology (EAIT 2020)*, *Lecture Notes in Networks and Systems, Springer*, pp. 374-383, 2021, doi: https://doi.org/10.1007/978-981-16-4435-1_36.
- K.S. Alam, **S. Bhowmik**, P.R.K. Prosun, "Cyberbullying Detection: An Ensemble Based Machine Learning Approach", *2021 Third International Conference on Intelligent Communication Technologies and Virtual Mobile Networks (ICICV)*, *IEEE*, pp. 710-715, 2021, doi: 10.1109/ICICV50876.2021.9388499.

TEACHING EXPERIENCE

Lecturer, Dept. of Computer Science and Engineering (Profile) *Apr 2019 – Present*

Bangladesh Army International University of Science and Technology (BAIUST)

- **Teaching Courses:** Machine Learning, Artificial Intelligence, Applied Statistics and Queueing Systems, Numerical Methods, Digital Logic Design, Computer Fundamentals and Basic Programming, Artificial Intelligence Laboratory, Data Structures and Algorithm Laboratory, Basic Programming Laboratory, Operating Systems Laboratory, Computer Interfacing Laboratory.
- **Supervised Thesis:** Colon Image Segmentation was carried out by a Light-weight Convolutional Neural Network for early detection of Colorectal Cancer by identifying Adenoma and Hyperplastic polyps. The proposed model outperformed the conventional pre-trained transfer learning models, for example, VGG16, VGG19, ResNet50.
- **Current Project:** Human Emotion recognition from Bengali Textual context. A dataset is being created with multiple emotion classes labeled by probabilistic score meter rating and crowdsourcing.

RESEARCH AND ACTIVITIES

Research Works ***(More details can be found here)***

Natural Language Processing *Aug 2020 - Present*

- Designing customized Machine Learning and Deep Learning Frameworks in order to improve Opinion Mining tasks by employing natural language features such as TF-IDF, Word Embedding, Bag of Words, etc. The research focuses on cyber-aggression recognition, fake news identification, spam filtering with robust Artificial Neural Network, Hybrid LSTM-CNN architecture and Ensemble of Machine Learning algorithms.

Data Mining *Mar 2020 - Feb 2021*

- Categorized the vulnerability of migrant friendly countries for Bangladeshi Immigrants due to Covid-19 by analyzing the return causes of migrants and other categorical features using Clustering Algorithms and Probabilistic Modeling. Probabilistic likelihood score was assigned to each attribute by Bayes theorem where K-Means++, Agglomerative and BIRCH algorithms were applied to split twelve unlabeled countries into five separate classes.

Speech Recognition *Feb 2018 - Jan 2019*

- **Undergraduate Thesis.** Determined the impact of Dimensionality Reduction, Audio Frame Truncation and Acoustic Features on non-invasive Voice Disease Identification by Machine Learning Algorithms. Several voice disorders (Dysphonia, Laryngitis, Renkei's Edema) were recognized by extracting Mel-Frequency Cepstral Coefficient, Shimmer, Jitter and Harmonic-to-Noise Ratio, etc.

Miscellaneous *Jun 2019 - May 2021*

- Provided Security to Speech Signals by encoding and decoding the Audio Signals by DNA Cryptography.
- Secured Forensic Information by creating Hyperledger based Private Blockchain System to inhibit Intruder Intervention.

Assistantship

Operator, Fablab KUET (Profile) *Feb 2018 – Nov 2018*

- Designed several prototypes for multiple projects using Laser Cutter, 3D Printer, CNC Milling Machine, etc. and maintained the website of the laboratory to update activities.

Mentoring

Hardware Acceleration Club of KUET (HACK) *Jun 2017 – Jul 2018*

- Conducted Embedded System Development workshops based on Arduino and Raspberry Pi for the undergraduate students.

STANDARDIZED TEST SCORES

GRE *Feb 18, 2021*

- Total 305/340 (Quantitative Reasoning: **164/170**; Verbal Reasoning: 141/170); Analytical Writing Assessment: 3.5/6;

IELTS *Jun 19, 2021*

- Overall **7.5** (Listening: 8; Reading: 7.5; Writing: **7.0**; Speaking: **7.5**);

ACADEMIC COURSEWORK AND PROJECTS

Relevant Courses

- Machine Learning (*Theory and Laboratory*); Data Mining; Artificial Intelligence (*Theory and Laboratory*); Biomedical Engineering; Image Processing and Computer Vision (*Theory and Laboratory*);

Selective Undergraduate Projects ***(More details can be found here)*** ***[Github]***

- Bus Locator for Passengers (*Android*)
- Optical Mark Recognition Sheet Scanning based Quiz Evaluation System (*Android, OpenCV*)
- Art Gallery Management System (*SQL*)
- KUET CSE Website (*PHP, HTML, CSS, Javascript, Ajax*)
- Smart Cap for Blinds (*Arduino, Sonar Sensor, Vibrator Motor*)
- Smart Security Box (*Arduino, GSM Technology, LDR Sensor, Servo Motor*)
- A 2D Snake Game (*OpenGL, C++*)

SKILLS

- **Programming Languages**: Python, C, C++, Java, MATLAB, Prolog, Assembly, Swift

- **Data Science Tools**: Scikit-Learn, Keras, Tensorflow, NLTK, Librosa
- **Data Visualization**: Matplotlib, Weka, Excel
- **Web Programming**: HTML, CSS, PHP, Javascript, Ajax, Laravel Framework
- **DBMS**: Oracle, MySQL, Firebase
- **IDE**: Anaconda, Google Cloud Platform, CodeBlocks, Eclipse, Microsoft Visual Studio
- **Operating System**: Windows, Ubuntu
- **Version Control**: Git, Github
- **Hands-On**: Latex, Microsoft Office, Cisco Packet Tracer, OpenCV, OpenGL

CERTIFICATIONS AND ATTENDED WORKSHOPS

Selective Online Certificates *(All the certificates can be found here)*

- Neural Networks and Deep Learning
- Improving Deep Neural Networks: Hyperparameter tuning, Regularization and Optimization
- Introduction to TensorFlow for Artificial Intelligence, Machine Learning, and Deep Learning
- Structuring Machine Learning Projects

Selective Workshops

- International Workshop on Computational Analysis of Undesired Texts on Social Media (*Arranged and Hosted by CUET NLP Lab and IEEE CUET Student Branch, Bangladesh*)
- Bangla Language Remembrance Project in Information Technology through Research and Development (*Arranged by ICT Division and Hosted by KUET CSE, Bangladesh*)

ACHIEVEMENTS AND OUTREACH

More about achievements and outreach activities can be found here

Selective Achievements

- **Best Paper Award** in Machine Learning Track received at BIM 2021
- Research Paper indexed in Global Literature on Coronavirus Disease, World Health Organization (WHO)
- Research Papers indexed in Scopus
- **Champion** in Project Showcasing, Digital World 2017
- Vocational Scholarship from Khulna University of Engineering & Technology (*2015 - 2018*)

Selective Leadership Skills

- Co-advisor, BAIUST Computer Club (*2019-Present*)
- Vice President, CSE Association of KUET (*2018-2019*)
- Treasurer, IEEE KUET Student Branch (*2018-2019*)
- Vice President, Hardware Acceleration Club of KUET (*HACK*) (*2018-2019*)
- Organizer, National High School Programming Contest, Khulna Zone (*2015, 2016, 2017*)

REFERENCES

Dr. Pintu Chandra Shill
Professor, Department of Computer Science & Engineering
Khulna University of Engineering & Technology
pintu@cse.kuet.ac.bd
Mobile: +8801676-303920

Dr. Kazi Rakibul Alam
Professor, Department of Computer Science & Engineering
Khulna University of Engineering & Technology
rokib@cse.kuet.ac.bd
Mobile: +8801714-087216