Md Fokhrul Islam

Curriculum Vitae

phone: +8801818888292
Email : fokhrul.rmedu@gmail.com
Github: fokhruli

Research Interests

My research interests include artificial intelligence, machine learning and their applications in the medical field. I am especially interested in the confluence of geometric deep learning, computer vision, and reinforcement learning for the purpose of developing highly accurate medical evaluation and prediction systems. I studied graph neural networks and their application to skeletal data for my undergraduate thesis (for Exercise assessment). Furthermore, I performed research in the areas of computer vision, action recognition, reinforcement learning, and natural language processing.

Education

- **University of Dhaka** — Dhaka, Bangladesh
  Bachelor of Science in Robotics and Mechatronics Engineering; CGPA: 3.45 out of 4.00 — *Feb. 2017 – Dec, 2021*

- **Ramgonj Model College** — Chattogram, Bangladesh
  Completed Higher Secondary Certificate(HSC); GPA: 5.00 out of 5.00 — *Jan. 2015 – Dec. 2016*

Experience

- **Research Assistant** — Dhaka, Bangladesh
  Under Dr. sejuti Rahman — *July, 2020 - Present*
  - **Graph Convolution Networks for Assessment of Physical Rehabilitation Exercises(Attention, ST-GCN)**: (Published IEEE TNSRE) We designed an automatic system to assess(continuous score) patients individual exercise and give feedback based on their performance. We leveraged the properties of skeleton graph from video to get better result. Our model can handle variation of paces of subject based on their performance.
  - **A Zero Shot Cross Lingual Framework for Sentiment Analysis of English-Bengali Code-Mixed Data(NLP, Code-Mixing, ZSL)**: (Under reviewed @ IEEE access) In this work, we developed a model which can classify sentiment of code mixed reviews. Due to the scarcity of annotated Bangla-English code-mixed data, we collected reviews of different products with user ratings and construct an annotated Bangla-English code-mix (BE-CM) dataset. We also present a simple but effective data augmentation method that may be utilized with existing word embedding algorithms without need of a parallel corpus and improve cross-lingual contextual understanding.

Projects

- **Classifying ASD/TD on Eye-Tracking Data Using Saliency Maps and Deep learning**: We design a visual saliency based deep learning model for automatic and quantitative ASD/TD classification. Instead of directly extracting features from the fixation data, our method employs several saliency maps in order to capture better information. We also incorporate few shot based method for this task because of low data availability.
- **Learning to Trade Using Deep Reinforcement Learning**: We train Reinforcement Learning model(based on Deep Deterministic Policy Gradient and others) to predict optimal policy for stock trading. The agent learn optimal policy while maximizing the profit it receives from its own actions and resulting positions. Our model was tested on both S&P 500 and Dhaka Stock Exchange(DSE) data.

Scolarships

- IFIC Bank Undergraduate Thesis Scholarship (2021)
- Bank Asia Higher Studies Scholarship (2017)
- Islamic Bank(IBBL) Scholarship (2017)
- SSC Board Merit Scholarship (2014)

Skills Summary

- **Languages**: Python, C++, C, Matlab, Bash, R
- **Frameworks**: Scikit, NLTK, Pytorch, TensorFlow 2.0, Flask, PyQT and others
- **Soft Skills**: Leadership, Event Management, Writing, Time Management

Publications

1. Swakshar Deb, **Md Fokhrul Islam**, Shafin Rahman and Sejuti Rahman, "Graph Convolutional Networks for Assessment of Physical Rehabilitation Exercises," in IEEE Transactions on Neural Systems and Rehabilitation Engineering, vol. 30, pp. 410-419, 2022, doi: 10.1109/TNSRE.2022.3150392. (**First co-author**)