

ASIR ABRAR

Rolla, MO 65401

(945) 217 2798 ◊ asirabrarragib17@gmail.com

EDUCATION

Missouri University of Science & Technology (Ph.D. in CS) Rolla, Missouri Research Interest: Cognitive Workload Assessment	Expected May 2030
Lamar University (MS in CS) Beaumont, Texas GPA: 4.00 Research Interest: NLP, Health informatics	May 2024
BRAC University (BSc in CSE) Dhaka, Bangladesh GPA: 3.01 Research Interest: Image Processing, Pattern Recognition	May 2018

RESEARCH & THESIS

Cognitive Workload Assessment

I am developing convolutional spiking neural networks (CSNNs) for classifying cognitive workload. This involved integrating and analyzing multimodal data from electroencephalography (EEG) and heart rate variability (HRV) measurements. The project focused on using the temporal and spatial characteristics of the collected data to improve the accuracy of cognitive workload assessments, providing a robust framework for understanding mental states in real-time.

Exploring Potential Linguistic features for detection of Alzheimer's disease

I used statistical tests like t-tests and machine learning techniques like mutual information classifiers and sequential forward feature selections to determine the important features. By combining this with cognitive behavioral information on how patients use language in their conversations, I plan to classify dementia from healthy controls.

Survey: Early-Stage Dementia Detection using Natural Language Processing

I conduct a review of early stage dementia detection using speech and text data, and available datasets in different languages. This survey conducts a comprehensive study for early stage dementia detection and dementia speech, text, audio, handwritten, and electronic health records

A Survey on Deep Learning-based Smart Assistive Aids for Visually Impaired Individuals (7th International Conference on Information System and Data Mining (ICISDM) 2023)

Our survey provides insights of recent research on visual aid development. It proposes a basic architecture for common devices and compares different techniques including the YOLO algorithm.

PROJECTS

- Using feature engineering for classification techniques to predict the age of abalone from physical measurement

- Patients' severity states classification based on electronic health record (EHR) data using multiple machine learning and deep learning approaches
- Multi-threaded chat room service using socket interface for network communication
- Smart billboard using Arduino UNO and MQ-8 sensor for detecting smoke
- Automated traffic monitoring system using Arduino Uno and VLP , and character recognition using morphological image processing and template matching technique

PROFESSIONAL EXPERIENCES

Research Assistant

Dept. of Computer Science, Missouri S&T (August 2024 - Present)
Rolla, Missouri

- Developing deep learning models for classifying cognitive workload.
- Collecting Data, preprocessing, signal cleaning, and segmentation for EEG and HRV datasets

Graduate Assistant

Dept. of Computer Science, Lamar University (Oct 2022 - May 2024)
Beaumont, Texas

- Analyzing the dementia patient's transcripts to identify the pattern
- Guiding an undergraduate student through her thesis and co-authoring research paper

Teaching Assistant

Dept. of Computer Science, Lamar University (May 2023 - May 2024)
Beaumont, Texas

- Distributed Systems, Cloud Computing, Programming Fundamentals III, Data Science and Big Data Analysis.

Programmer Analyst

Dcastalia Limited (Dec 2018 - Dec 2020)
Dhaka, Bangladesh

- Coordinated project planning, scheduling, and team management through effective communication and collaboration.
- Developed websites including e-commerce, school, and Learning Management systems by creatively designing and problem-solving

SKILLS

Programming Languages and Tools: Python, Java, C, C++, CLAN

ML/ AI: Pandas, Numpy, Matplotlib, Keras, Sklearn, TensorFlow, OpenCV, PyLangAcq and other common libraries

NOTABLE COURSEWORKS

Data Science and Big Data Analysis, Distributed Computing Systems, Advanced Operating Systems, Analysis of Algorithms, Foundations of Computer Science, Linear Algebra and Fourier Analysis, Algorithms, Numerical Methods, Artificial Intelligence, Intro to Deep Learning

AWARDS

- Outstanding Mentor Award - CS SUCCESS (2023,2024)