

SHEMONTODAS

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Education

Master of Science in Computer Science

Memorial University of Newfoundland

Jan 2022 - April 2024 (Expected)

Bachelor of Science in Computer Science and Engineering

BRAC University, Bangladesh

Jan 2017 - Jan 2021

Projects

Preprocessing & Data Labeling Pipeline

(Python, Matplotlib, Tkinter)

- Developed a versatile pipeline for preprocessing, event retrieval and annotation from sensor data.
- Utilized sliding overlapping window for feature generation from time series.
- Integrated scaling functions to standardize the data.
- Used PCA for visualizing data distribution in hyperspace.
- Combined matplotlib and tkinter for interactive event annotation and analysis interface.

Active Learning Framework for Texture

Classification (Python, Sklearn, Pandas, Scipy)

- Preprocessed and analyzed tactile sensing data
- Developed hypertuning function for optimizing window sizes.
- Performed Wilcoxon hypothesis testing.
- Integrated machine learning models namely random forest, xgboost for classification.

Instrumar's Active Learning Pipeline for Manufacturing Fault Classification

- Automate Fault classification in the industrial manufacturing process.
- Developed a balancement algorithm for handling data imbalance in Instrumar's time series data.
- Developed multiple active learning strategies and integrated ML models (xgboost, gradientboosting classifier) and Neural Networks.
- Performed anomaly detection, feature generation, selection and dimensionality reduction techniques.
- Reduced data annotation cost and time for Instrumar, making fault classification efficient.

Bracu Duburi Control and Communication

Protocol (Arduino, Raspberry pi, OpenCV)

- Founding member and sub-team lead of Bangladesh's first autonomous underwater vehicle.
- Developed the underwater control and automation protocol of the rover.

- Performed OpenCV based underwater object detection for the AUV.

Work Experience

Data Science Intern

Instrumar Limited

May 2022- Present

Graduate Teaching Assistant

Memorial University of Newfoundland

Jan 2022- Present

Contractual Lecturer

Department of Mathematics and Natural science, BRAC University

Oct 2021-Jan 2022

Machine Learning Engineer

Arthor Limited

Feb 2021-July 2021

Skills

- **Language and Frameworks:** Python, Java, HTML, SQL, Tensorflow, Keras, Pandas, Numpy, Latex.
- **Software and Tools:** VS Code, Google Colab, Anaconda Navigator, Git, Tableau, Arduino, Raspberry pi, Nvidia Jetson Nano.

Awards

- Graduate Research Award 2023 for strong research contribution, Department of Computer Science, Memorial University.
- Awarded for Best Graduate Talk at the SEA 2023 conference by the Faculty of Science, Memorial University.
- Recipient of Vice Chancellor Certificate at BRACU during residential semester.
- Secured 7th position at Singapore Autonomous Underwater Vehicle Challenge, 2018.
- Champion (Line following Robot), DUET Tech Fest 2018.
- Champion, State level Inter School English Parliamentary Debate Competition.
- Placed on VC's list for multiple semesters at BRACU and graduated with high distinction

Publications

- Active Learning Strategies for Robotic Tactile Texture Recognition Tasks, Journal: Frontiers in Robotics and AI, section Robot Learning and Evolution
- Unbalanced Fault Classification Using Active Learning in Synthetic Fiber Manufacturing Process, IEEE Syscon 2024

Extracurricular Activities

- President(Highest executive position), Robotics Club of BRAC University (2020-2021).
- Debating(English Parliamentary Debate).