Saurabh Singh

Graduate Student | Computer Science
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Education

Boston University **May 2023 – May 2025**
Masters in computer science *Boston, MA, USA*
GPA: 3.8/4

Tezpur University **August 2018 – July 2022**
Bachelor of Technology in Computer Science and Engineering *Tezpur, Assam, India*
CGPA: 7.48/10

Conference Proceedings

Adaptive early classification of time series using Deep Learning **July 2022**
Conference: International Conference on Neural Information Processing (ICONIP 2022)
- Developed the RCRL model, leveraging RNN and CNN methods, to pioneer adaptive early time series classification. Achieved remarkable accuracy improvements while enabling timely predictions, making high impact in fields like medical diagnosis.

Driving behavior analysis using Deep Learning on GPS data **April 2022**
Conference: International Conference on Emerging Global Trends in Engineering and Technology (EGTET 2022)
- Applied advanced statistical techniques and feature extraction methods to assess driving behavior from GPS trajectory data. Developed scoring mechanisms based on cumulative distribution functions (CDFs).
- By introducing innovative features and leveraging deep learning models like MINIROCKET, accomplished outstanding accuracy in classifying driving behavior, contributing to road safety and risk assessment.

Research Internship

Deep Learning Research Intern at IIT BHU **April 2021 – October 2021**
- Designed a novel ECTS method that handles the Early classification problem in two parts, Part one extracts features from the data using LSTM and CNN, another part uses Reinforcement Learning to decide when to halt based on observed information.
- Attained performance significantly outperforms state-of-the-art alternatives in both accuracy and earliness.

Projects

Transfer Learning on CIFAR10: Benchmarking Inceptionv2, ResNet50, and VGG19
- Fine-Tuned pretrained models using gradual unfreezing, discriminative fine-tuning, and learning rate scheduling.
- InceptionV3 achieved 95.44% accuracy and an F1 of 0.95, outperforming ResNet50's 94.11% and VGG19's 93.31% accuracy.

Heart Disease Prediction using Logistic Regression
- Conducted data analysis, statistical modeling, data visualization and predicted heart disease using Logistic Regression.
- Achieved 88.13% accuracy in detecting heart disease, with 92% sensitivity and 84% specificity.

Face Recognition Attendance System
- Developed a face recognition system using OpenCV and face recognition to detect and recognize faces in real-time webcam.
- Executed automated attendance recording with real-time CSV logging.

Exploratory Data Analysis and Sampling
- Conducted data cleaning, preprocessing, visualization. Illustrated Central Limit Theorem by random sampling experiments.
- Employed sampling methods like simple random sampling and stratified sampling.

Optimal Gameplay using Reinforcement Learning
- Applied Q-learning on Crawler robot in simulated environment. Observed parameters affect the agent's policies and actions.
- Implemented an approximate Q-learning agent and with only 50 training games, agent managed almost 100% win rate.

Technical Skills

Languages: Python, R, Java, C/C++, HTML/CSS, SQL, MATLAB
Libraries: Pandas, NumPy, Matplotlib, PyTorch, SciPy, Seaborn
Software and Tools: Google CoLab, Jupiter Notebook, EMU8060, GIT, Android Studio, Visual Studio Code, LaTeX

Extra Curriculars

- Gold Medal at the TU Inter-Hostel Football Tournament | *2019* **Tezpur University**
- Runner-up at the MONSIGNOR JEROME MALANFANT MEMORIAL Football Tournament | *2016* **St. John's School**