

**DEPARTMENT OF INFORMATION TECHNOLOGY**

**IT3811-PROJECT WORK (Zeroth Review)**

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**Tentative Title:**

Machine Learning-Based Stroke Prediction Using Neuroimages

**Project Domain:**

Artificial Intelligence, Machine Learning, Medical Image Processing

**Problem Definition:**

Stroke is a leading cause of death and disability worldwide. Early detection and diagnosis play a crucial role in reducing its impact. Traditional methods rely heavily on manual interpretation of CT scans, which can be time-consuming and prone to human error. This project aims to develop an automated stroke detection system using machine learning techniques, including genetic algorithms and bidirectional long short-term memory (BiLSTM), to improve accuracy and efficiency.

**Scope:**

* Development of an AI-based stroke prediction model using brain CT scan images.
* Implementation of feature selection using genetic algorithms to optimize stroke classification.
* Integration of BiLSTM for accurate classification of stroke images.
* Performance comparison with traditional ML models like Logistic Regression, Decision Trees, and SVM.
* Evaluation using precision, recall, F1-score, and AUC (Area Under Curve).

**Requirements:**

* **Software:** Python, TensorFlow/ Keras , OpenCV, Scikit-learn, NumPy, Pandas, Matplotlib
* **Hardware:** System with GPU support for deep learning model training
* **Dataset:** Stroke-related brain CT images (Kaggle or hospital-based dataset)
* **Algorithms:** CNN, Genetic Algorithm, LSTM, BiLSTM, SVM, Random Forest

**Status/Remarks:**

* Literature review completed based on the base paper.
* Dataset collection in progress.
* Model architecture design phase initiated.

**Signature[Students] Signature[Guide] Signature[Project Co-Ordinator]**