

SCHOOL OF COMPUTING**DEPARTMENT OF ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING****PROJECT ABSTRACT SUBMISSION (2025-26)**

Title of the Project	Brain Stroke Diagnosis System with Neuroimages Using Machine Learning
Program of Study	B. Tech CSE-AIML
Batch Number	07
Section	B3
Name of the Section Incharge	Dr.K. Padmaja
Name of the Supervisor	Mr.V. Siva Prasad

1. Abstract (not more than 300 words).

Cerebrovascular diseases, particularly stroke, remain a leading cause of death and disability worldwide. Early detection and timely intervention are crucial to improving outcomes. This study presents an advanced stroke detection system using brain CT images, integrating a genetic algorithm for feature selection with a hybrid Convolutional Neural Network–Bidirectional Long Short-Term Memory (CNN-BiLSTM) model. The genetic algorithm reduces dimensionality, while the CNN extracts spatial features and the BiLSTM captures sequential dependencies critical to diagnosis. To further improve reliability, we employ domain-specific data augmentation, transfer learning with pretrained models, attention mechanisms, and ensemble strategies. Interpretability is ensured through explainable AI (XAI) methods such as Grad-CAM, which highlight clinically relevant regions. Evaluation with cross-validation using precision, recall, F1 score, ROC, and AUC demonstrates robust performance. By combining evolutionary optimization with deep learning enhancements, the proposed framework improves diagnostic reliability, reduces misdiagnosis risks, and supports faster clinical response in acute stroke management.

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