Department of Electrical and Computer Engineering
North South University

Senior Design Project

Comparative Study of Machine Learning Approaches in Detection of Facial & Vocal Paralysis

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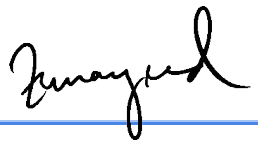
Approval

The Senior Design Project entitled "**Comparative Study of Machine Learning Approaches in Detection of Facial & Vocal Paralysis**" by Nazia Tabassum Toma (ID#1721536042), Farishta Jayas Kinjol(ID#1721411042) and Syed Maaher Hossain (ID#1731045042) has been accepted as satisfactory and approved for partial fulfilment of the requirement of BS in CSE degree program in October 2021.

Supervisor's Signature



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Abstract

Statistical analysis has shown a significant increase in the rate of brain strokes in recent times. The time required to carry out the conventional methods to detect brain stroke on a patient requires both trained personal and time. Any discrepancy in the process might also lead to fatal consequences. To make the stroke detection technique less formidable, this report presents a method that minimizes the amount of time taken to detect stroke in a patient applying the FAST system coupled with a deep learning model that detects facial drooping and speech paralysis. We have compared different pre-trained models to find out the best suitable one for detecting vocal and facial paralysis. In our findings, we successfully ran tests on facial image and voice recording datasets. We were able to attain 99.67% training accuracy and a 99.37% validation accuracy using the VGG-16 deep learning model for facial paralysis and 73.02% training accuracy and 76.86% validation accuracy using the ANN deep learning model for vocal paralysis.