PAYLYTIC
FACIAL EMOTION DETECTION SYSTEM FOR SELF-BANKING APPLICATIONS

Wannakuwattawaduge Nimna Ravishani Fernando

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School of Computing

Informatics Institute of Technology, Sri Lanka in collaboration with the University of Westminster, UK

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Abstract

Scientifically, it is very difficult to provide a proper definition for emotion. Analysing a human's emotions can determine their current mental state. Human emotions and mental states have a strong interconnection. Emotions have a considerable influence on human cognitive processes, including attention, decision-making, problem solving, reasoning, etc. Emotions can control a person's depth of thinking and it can change quickly from time to time. Both positive and negative emotions can affect the decision-making process. Since emotion and mental state have a connection, emotions can affect mental state and humans' self-control. This can lead to making wrong decisions or mistakes. People face these kinds of emotional problems while using self-banking applications. Because of this, some people are hesitant to adopt self-banking application.

To address these problems, this project attempts to integrate the self-banking application with the facial emotion detection system and design the self-banking application with new features to manage the user's current emotion to perform bank activations accurately and efficiently. This project provides a seven-emotions classification model based on the VGG19 architecture and also designs a four-emotions classification model based on the ResNet50 architecture to demonstrate self-banking applications with emotion detection-related features. While designing these models, the author added new convolutions and fully connected layers on top of the base models.

The seven emotion-based CNN classification model achieved 96% accuracy, and the seven emotion-based model achieved 97% accuracy.

Keywords: Facial Expression Recognition, Emotion Detection, Machine Learning, Deep Learning, Image Processing, Self-Banking Applications

Subject Descriptors:

- Computing methodologies $\longrightarrow$ Deep learning $\longrightarrow$ Deep Learning Algorithm $\longrightarrow$ Feature Extraction
- Computing methodologies $\longrightarrow$ Artificial Intelligence $\longrightarrow$ Computer vision $\longrightarrow$ Object Recognition
- Human-centered Computing $\longrightarrow$ Human Computer Interaction $\longrightarrow$ Interaction paradigms $\longrightarrow$ Graphical User Interface