TanzaNote: First Step Towards Classification and Notation Generation for Sri Lankan Traditional Instruments, Gataberaya and Flute

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Sri Lanka has a rich history of music, with a wide variety of traditional instruments. However, a significant challenge in Sri Lankan music is the lack of software capable of identifying which traditional instruments are played in a song. This is an issue for both students and musicians learning music when they struggle to recognize individual instruments when multiple instruments are played together. This paper presents a novel approach to address the gap in instrument classification by a standard traditional deep learning approach, using a flute, a pitched instrument, and gataberaya, an unpitched indigenous drum, using 249 manually recorded audio samples. These instruments play a crucial role in folk and ceremonial music. The classification model was trained on 168 flute and 81 gataberaya raw audio files which were in varying lengths and were single noted. These audio files were turned into Mel-spectrograms to train the Convolutional Neural Network model featuring two convolutional layers.This work includes class imbalance handling and data augmentation methods for both raw audio and Mel-spectrograms, which increased the dataset size to 5,632 before the model training process. The raw audio data augmentation techniques used were noise addition and time stretch, frequency masking and time masking were added for Mel-spectrograms. The model achieved a training accuracy of 99.67%, a validation accuracy of 99.82%, and a testing accuracy of 99.23%, showing reliability and consistency. This approach provides a valuable tool for improving music education and potentially preserves cultural heritage through advanced technology.

Keywords: *deep learning, convolutional neural network, Mel-spectrogram, music instrument classification.*