

Musical Instrument Recognition in Polyphonic Audio Through Convolutional Neural Networks and Spectrograms

Authors : Rujia Chen, Akbar Ghobakhlou, Ajit Narayanan

Abstract : This study investigates the task of identifying musical instruments in polyphonic compositions using Convolutional Neural Networks (CNNs) from spectrogram inputs, focusing on binary classification. The model showed promising results, with an accuracy of 97% on solo instrument recognition. When applied to polyphonic combinations of 1 to 10 instruments, the overall accuracy was 64%, reflecting the increasing challenge with larger ensembles. These findings contribute to the field of Music Information Retrieval (MIR) by highlighting the potential and limitations of current approaches in handling complex musical arrangements. Future work aims to include a broader range of musical sounds, including electronic and synthetic sounds, to improve the model's robustness and applicability in real-time MIR systems.

Keywords : binary classifier, CNN, spectrogram, instrument

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