A Dataset for Multiple Instrument Recognition in Persian Traditional Music

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Abstract

The task of identifying instruments in a polyphonic setting has been understudied in the Western music domain. This music information retrieval task is not only crucial, with various applications, but also challenging. Despite considerable advancements in polyphonic instrument recognition in Western music, this task is underexplored in Persian traditional music, lacking both research and datasets. This paper outlines the creation of a new multi-instrument recognition dataset for Persian traditional music. Each instance consists of a 5-second excerpt, labeled by annotators, indicating the presence or absence of 10 instrument classes. Additionally, the paper presents experimental results of a baseline model, aiming to inspire future research in this domain.

1 Project Overview

1.1 Background and Related Work

Music information retrieval (MIR) has been extensively explored in Western music for many years, addressing various tasks such as instrument recognition, source separation, and emotion detection [Li, 2023]. Despite its advantages, these tasks are not yet addressed in the domain of Persian traditional music. The relatively limited number of annotated datasets in this domain has impeded further research and development in this field.

Numerous datasets have been conducted in the Western domain. MedleyDB [Bittner, 2014] and MusicNet [Thickstun, 2016] are annotated at a

note-level for each instrument; however, they contain a relatively smaller number of pieces. On the other hand, IRMAS [Bosch, 2012] offers tagging for the predominant instrument, and OpenMic [Humphrey, 2018] is annotated with positive and negative tags for 30 instruments.

1.2 Contribution

In this project, we aim to address the gap by introducing a novel dataset specifically designed for multiple instrument recognition in Persian traditional music. This dataset comprises 5-second excerpts labeled for 10 instruments commonly used in Persian traditional music. To this end, we firstly propose an ontology for Persian traditional instruments. Then, we select the 10 most utilized instruments in this domain. Subsequently, we choose a subset of music pieces that include these instruments from the BeepTunes dataset[1], an Iranian streaming service. After extracting 5-second excerpts from these music pieces, with the assistance of a number of music students at the University of Tehran and Tehran University of Art, we tag the excerpts for each instrument with positive and negative tags, leveraging the presence of the instrument tag in the music piece.

References

[Li, 2023] Li, Yizhi, et al. "MERT: Acoustic Music Understanding Model with Large-Scale Self-supervised Training." arXiv preprint arXiv:2306.00107 (2023).

[Bittner, 2014] Bittner, Rachel M., et al. "Medleydb: A multitrack dataset for annotation-intensive mir research." ISMIR. Vol. 14. 2014.

[Thickstun, 2016] Thickstun, John, Zaid Harchaoui, and Sham Kakade. "Learning features of music from scratch." arXiv preprint arXiv:1611.09827 (2016).

[Bosch, 2012] Bosch, Juan J., et al. "A Comparison of Sound Segregation Techniques for Predominant Instrument Recognition in Musical Audio Signals." ISMIR. 2012.

[Humphrey, 2018] Humphrey, Eric, Simon Durand, and Brian McFee. "OpenMIC-2018: An Open Data-set for Multiple Instrument Recognition." ISMIR. 2018.

[1] https://beeptunes.com/