

Genetic Algorithms for Feature Generation in the Context of Audio Classification

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Abstract : Choosing good features is an essential part of machine learning. Recent techniques aim to automate this process. For instance, feature learning intends to learn the transformation of raw data into a useful representation to machine learning tasks. In automatic audio classification tasks, this is interesting since the audio, usually complex information, needs to be transformed into a computationally convenient input to process. Another technique tries to generate features by searching a feature space. Genetic algorithms, for instance, have being used to generate audio features by combining or modifying them. We find this approach particularly interesting and, despite the undeniable advances of feature learning approaches, we wanted to take a step forward in the use of genetic algorithms to find audio features, combining them with more conventional methods, like PCA, and inserting search control mechanisms, such as constraints over a confusion matrix. This work presents the results obtained on particular audio classification problems.

Keywords : feature generation, feature learning, genetic algorithm, music information retrieval

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