

Abstract

The rapid growth of artificial intelligence has enabled its application to a myriad of tasks across varied fields of research. Advances in A.I. approaches to multimedia related tasks have piqued the interest of a wider general public and have entered the mainstream in forms of analytic applications, entertainment software and otherwise. The music domain is not an exception, methods for audio analysis and music generation, utilizing supervised machine learning, specifically deep learning models, are enjoying an increase in popularity due to their success compared to traditional handcrafted signal processing methods.

The goal of this thesis is to investigate the potential of a combined model for two music analysis tasks: beat tracking and chord recognition. The state of the art solutions for both of these problems heavily rely on deep learning, moreover multi-task approaches for some music analysis tasks have already been proven successful in the past. A joint deep learning model for beat tracking and chord recognition could benefit from data present for both tasks, since these problems do not exist in a theoretical vacuum and likely overlap in some way. Also sharing a model offers practical benefits like reduced training times and pooling of annotation resources which are expensive to produce for both beat tracking and chord recognition.