



Internship Report Abstract

**Training with Unaligned Data:
Differential DTW and
Implementation on Chord Recognition**

submitted by

Quang Hoang Nguyen Vo

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Supervisors

M. Sc. Johannes Zeitler
Prof. Dr. Meinard Müller

Abstract

The evolution of Deep Neural Networks (DNNs) has shifted the paradigm of music information retrieval (MIR) from heuristic and mathematical models to data-driven approaches, which rely on large amounts of labelled training data. However, it introduces challenges when training with weakly aligned datasets. In this project, we investigate the characteristics of differential dynamic time warping (dDTW) through the soft-DTW (sDTW) algorithm when training with weakly aligned data. The main objective is to integrate soft-DTW as a loss function in the training process of a template-based chord recognition model. The dataset will have its chord label timestamps distorted or removed to simulate weakly or unaligned data. The dDTW loss function will then be used to train the model with the distorted dataset. The results will be compared with those obtained using the original dataset and the Connectionist Temporal Classification (CTC) loss function. Additional tasks may include experimenting and evaluating the performance of sDTW with different stabilizing strategies.