PRUNING SUBSEQUENCE SEARCH WITH ATTENTION-BASED EMBEDDING

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ABSTRACT

Finding the most similar sequence to a query in a database of sequences can be prohibitively expensive when the database size is large. Typically, the scalability of different approaches are dependent on various "pruning" techniques, which use heuristics to avoid expensive comparisons against a large subset of the database. We present an approximate pruning technique which involves embedding sequences in a Euclidean space. Sequences are embedded using a convolutional network with a form of attention which integrates over time, which is trained using matching and non-matching pairs of sequences. By using fixed-length embeddings, our pruning method effectively runs in constant time, making it many orders of magnitude faster when compared to full Dynamic Time Warping-based matching. We demonstrate the effectiveness of our approach on a large-scale musical score-to-audio recording retrieval task.

Index Terms— Sequence Retrieval, Attention-Based Models, Convolutional Networks, Dynamic Time Warping, Pruning

1. INTRODUCTION

[1] [2]

2. REFERENCES

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