

Preface

A leading use of speech recognition technology is the conversion of large speech databases into text for indexing and retrieval purposes. Using a large vocabulary continuous speech recognition (LVCSR) engine seems to provide a natural solution, as speech can be fully converted into text and then indexed and searched.

One method used for searching speech databases is Keyword Spotting (KWS). Speech recognition technology is used in KWS-based applications to enable specific words to be identified out of a stream of continuous speech. This is particularly useful when a relatively small number of words need to be quickly pinpointed within a huge speech database.

KWS can be implemented using various methods. The phonetic search approach is presented together with an analysis of its computational complexity. Following which, an anchor-based phonetic search algorithm is presented with evaluation results of its computational complexity. The KWS recognition performance using the anchor-based search is compared to an exhaustive search on several speech databases.

The purpose of this brief is to present the challenges involved in performing phonetic search KWS in large speech databases, with a specific focus on efficient searching. Ideally, all the underlying algorithms and related topics would have been presented, however this would be incongruent with the value of a “brief.” Thus in compensation, various published works were referred to in cases where additional information may be helpful to the reader.

Our research is currently focused on phonetic search based KWS within a lattice of phonemes and an extension of the search to multiple lattices generated from several languages in order to support KWS in languages with limited language resources.

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