This dissertation presents and evaluates a method to the video indexing problem by investigating a categorization method that transcribes audio content through Automatic Speech Recognition (ASR) combined with Dynamic Contextualization (DC), Phonetic Disparity Search (PDS) and Metaphone indexation. The suggested approach applies genome pattern matching algorithms with computational summarization to build a database infrastructure that provides an indexed summary of the original audio content. PDS complements the contextual phoneme indexing approach by optimizing topic seek performance and accuracy in large video content structures. A prototype was established to translate news broadcast video into text and phonemes automatically by using ASR utterance conversions. Each phonetic utterance extraction was then categorized, converted to Metaphones, and stored in a repository with contextual topical information attached and indexed for posterior search analysis. Following the original design strategy, a custom parallel interface was built to measure the capabilities of dissimilar phonetic queries and provide an interface for result analysis. The postulated solution provides evidence of a superior topic matching when compared to traditional word and phoneme search methods. Experimental results demonstrate that PDS can be 3.7% better than the same phoneme query, Metaphone search proved to be 154.6% better than the same phoneme seek and 68.1 % better than the equivalent word search.

Major: Computer Engineering

Educational Career:
Bachelor's of Electrical Engineering, BS, 1993, University of Florida
Master's of Computer Engineering, MS, 1998, University of Central Florida

Committee in Charge:
Dr. Ronald DeMara, Chair, EECS
Dr. Avelino Gonzalez, EECS
Dr. Shaojie Zhang, EECS
Dr. Eduardo Divo, IST

Approved for distribution by Dr. Ronald DeMara, Committee Chair, on September 30, 2010.

The public is welcome to attend.