**Abstract**

In this study we attempt to identify the spoken language of audio samples of speech using Deep Neural Networks (DNNs). Language Processing has been a subject of wide interest and a lot of work has been done towards that end. The first step in a language processing pipeline is always language identification (LID). Language identification facilitates transferring the control to an appropriate next stage of the processing system. In this dissertation, we adapt DNNs to the problem of language identification using the mel-frequency cepstral coefficients of audio signals as primary features. The audio signals are divided into several frames and the short term acoustic features extracted from each of these frames. Mean and Variance of these short-term acoustic features across several frames are calculated to capture the fluctuations of speech in order obtain a reasonable accuracy. These average features are then stacked together taking measures from both before and after the frame under consideration forming context windows to further capture the time dependent behavior of the signal. These windows result in a superior performance than many of the existing systems. These features are feeded into a Neural Network which is used to identify the top two prospective candidates for the given speech signal. Binary classification is then applied among these candidates to determine the final output. At both of these stages feature selection is applied to include only the most promising features and reduce the dimensionality of the inputs. Feature Selection for the binary classification stage results in a confusion matrix, which contains the selected features specifically aimed to differentiate between any two specified languages. Our findings suggest that DNNs can be used for LID tasks with reasonable accuracy. Although our model is tested using only 3 languages it can easily be extended to any number of languages.   
  
  
  
  
  
Keywords: Language Identification, Deep Neural Networks, mel-frequency coefficients, Context Window, Feature Selection