David McNeil 1876

Speech Recognition Using Linear Prediction Coding and Support Vector Machines

Folders

“audio_samples”- contains all audio samples used to train classifier in .wav format

“libs”- contains the library files of training feature vectors and the range arguments used for normalizing the data

“svms” - contains trained support vector machines to be used for real time prediction

“presentation” - contains the files for my in class presentation

Note: the libs and SVMs folder currently only contain the library, range, and SVM for the “remote control vehicle commands” example other libs can be generated using “get_data” and other SVMs can be trained using “train”

Documentation

“abstract.*” - contains original abstract of concept

“explanation.*” - explanation of files

“summary.*” - summary of results

Source Code

External Libarary Files: http://www.csie.ntu.edu.tw/~cjlin/libsvm/

“libsvmread.mexa64” - LIBSVM file capable of reading data from a library

“libsvmwrite.mexa64” - LIBSVM file capable of writing data to a library

“svmpredict.mexa64” - LIBSVM file used for generating predictions based on trained SVM

“svmtrain.mexa64” - LIBSVM file used to train a SVM classifier

Original Code

“random_string.m” - Matlab function to generate a random string, used to generate unique file names for recorded audio samples

“record.m” - Matlab program used to record samples of audio to be used as training data

“get_lpc.m” - Matlab function to generate LPC coefficients for a sample of audio, the number of coefficients per frame, frame size, and frame overlap can be set in this file

“get_data.m” - Matlab program to create feature vectors from audio samples to be saved as LIBSVM library

“libsvmscaledwrite.m” - Matlab function to write out a scaled LIBSVM library, scales data between 0 and 1 and produces a “.rng” file

“libsvmapplyscale.m” - Matlab function to apply the range data (.rng file) from one library onto an unscaled set of data

“train.m” - Matlab program to train a new SVM classifier given a LIBSVM database, writes this classifier out to ths “svms” folder

“rtp.m” - Matlab program which applies an SVM classifier to audio samples in real time

“math.m” - Matlab program specifically geared toward use with an SVM that has been trained on recognizing numbers and mathematical operations