Neural Networks Project Proposal
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I would like to train a neural network to distinguish between audio clips of spoken phonemes. In particular, I would like to design a network that can classify between the two Korean consonants,'ㅅ' and 'ㅆ', both of which sound approximately like an English 's'. This would be very useful to me as a Korean language learner, as distinguishing between the sounds of these two consonants is the most difficult aspect of mastering Korean pronunciation.

My network will take an audio sample and classify it as the more appropriate Korean letter. I will likely need to modify the audio samples by performing some sort of spectral analysis before inputting them into the network to be classified. Hopefully, my network will be as robust as possible, and will be able to perform correctly for a variety of different speakers.

Much research has already been done on voice recognition with Hidden Markov Models. This project is different from general speech recognition in that rather than trying to build a grammatically correct sentence from the given audio signal, it simply wants to classify the inputted sound into a small number of possible categories. Even so, it is possible that Hidden Markov Models will be helpful. [Since the course is on Neural Networks, this approach using Hidden Markov Models was not pursued.]

Possibly helpful web resources:

Speech Recognition Using Neural Networks,
[http://cslu.cse.ogi.edu/tutordemos/nnet_recog/recog.html]

Neural Network Speech Recognition,
[http://www.utdallas.edu/~austinwm/ANNSpeechRecognition.pdf]