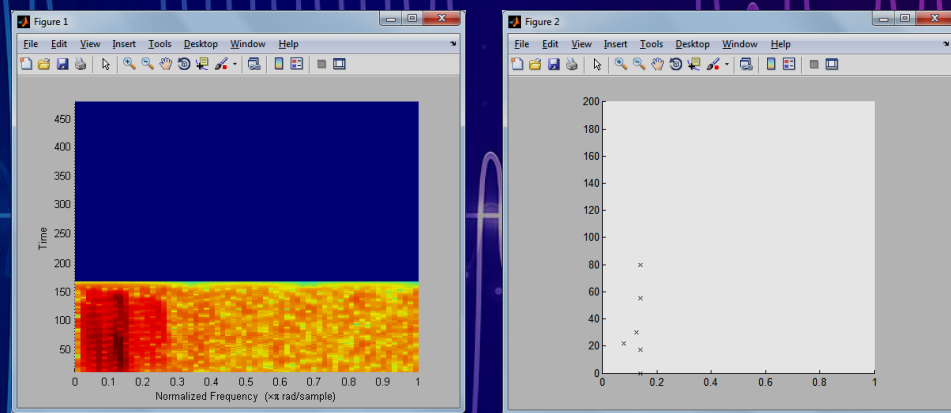


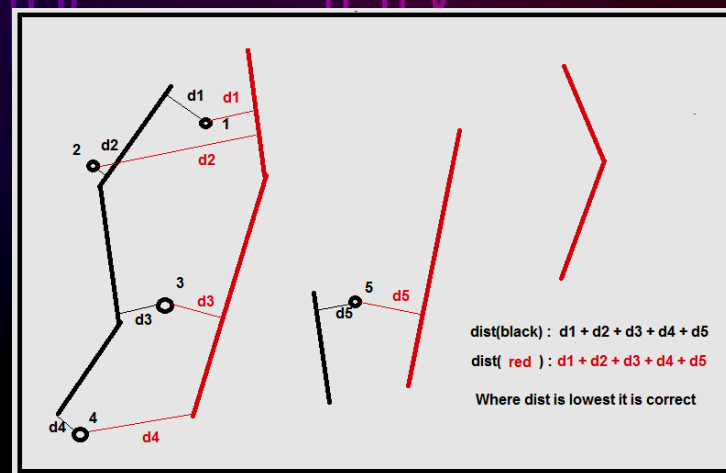
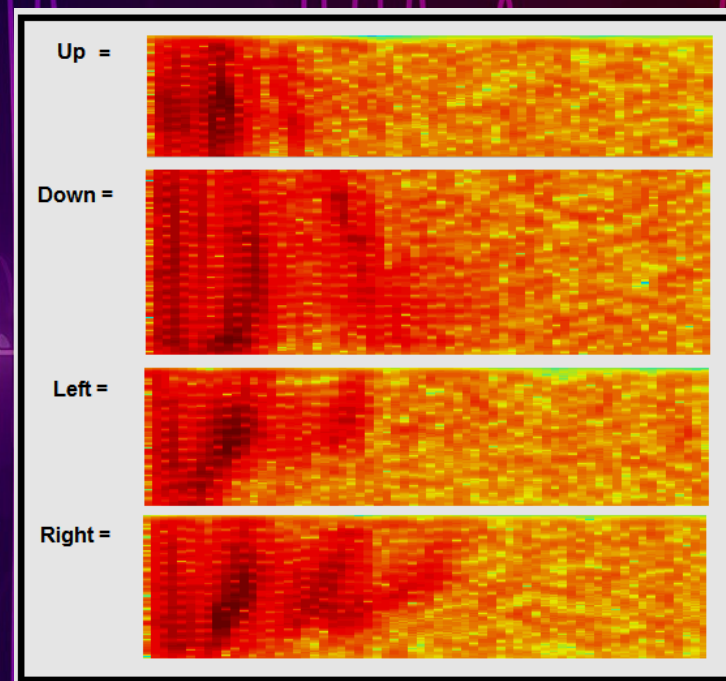
Voice Recognition

The aim of this project is an implementation of voice recognition. Voice recognition has been around for a while and some very promising developments have occurred recently. But is still a relatively new area that needs a lot of research. There are two main ways that speech/sounds can be recognized. The first is splitting of words into smaller and smaller parts until the basic sounds are left. The other method uses the pattern of the sound waves to match to learned data.

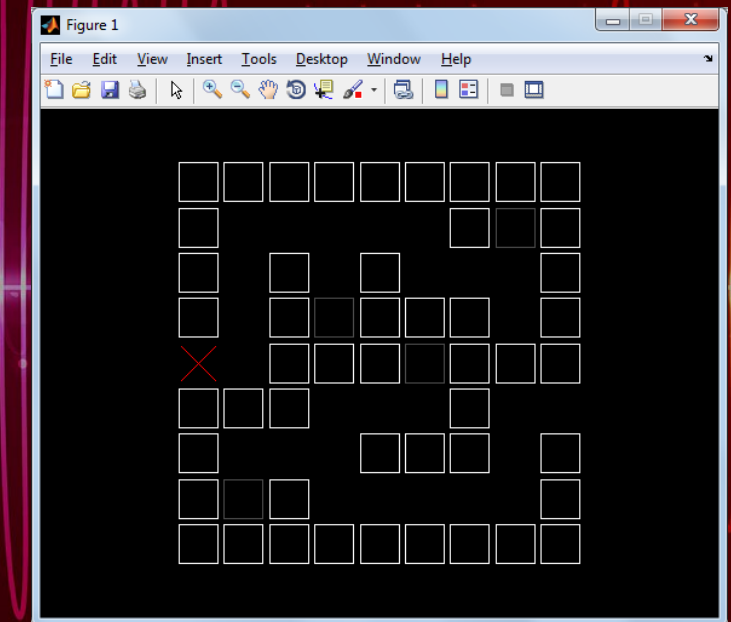


My voice recognition uses a sound frequency matching method, that is implemented using MatLab and the spectrogram function. I create a spectrogram of the sound and then select the most prominent values to match (*Shown in fig 1, 2 to the left*). This shows how I pick out the relevant points and how it can be matched to other samples. The figure to the right shows the method used to match the points to one another. The red and black lines represent patterns of points learned from the training and in essence uses the nearest mean classifier.

The below image is a representation of the sounds in spectrogram form. As you can see the 'Up', 'Down', 'Left' and 'Right' sounds are distinctive in small ways. Unfortunately because of this it is sensitive to background noise.



When the game is started your counter (the red X) is placed at the entrance to the maze and you must find your way to the other side. This is done by using the 'Up', 'Down', 'Left' and 'Right' words. The way that my method is implemented is that you press a key and then it listens for one second for your command then matches it. The game itself is a simple maze game that is purely a method to show the speech matching algorithms functionality.



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