

Possible MEng Projects 2010

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Here are some projects that I would like to supervise in 2010/2011

Automatic accent identification

In EECE we have recordings of speech representing 25 different regional accents of the British Isles. For each accent, we have approximately 20 minutes of recordings each from 20 speakers. The aim of this project is to use this data to build a system for automatically classifying an individual's accent from his or her speech. I envisage that the system will have two components, namely (i) an acoustic component and (ii) a phonotactic component. The acoustic component models the set of sounds that characterize a particular regional accent, while phonotactics is about modeling the sequences of sounds that characterize a particular regional accent. The acoustic component will be based on a Gaussian Mixture Model (GMM), which should be familiar if you did EE3J2. The phonotactic component will look at sequences of GMM components. The system could be implemented in MATLAB or C.

Measuring engagement using a portable wireless brain scanner

In the past I have supervised projects in which speech is combined with another other modality (e.g. gaze or gesture) to achieve some communicative goal (e.g. communicating with a robot). One of the problems with gaze is that the fact that someone is looking at something doesn't mean that they are attending to it or talking about it – they might be doing some arithmetic and staring into space. The idea of this project is to see if the signal from a portable wireless brain scanner can be used to differentiate between instances where a subject is actively looking at an object or staring blankly at it. I'd intended to collect data using a brain scanner in psychology, but I think Bob Stone has one, so we could ask him nicely instead.