



UNIVERSITY OF  
BIRMINGHAM

Funded PhD Project

## **CHARACTERISATION OF REGIONAL ACCENTS OF BRITISH ENGLISH FOR SPEECH TECHNOLOGY**

Professor Martin Russell

Department of Electronic, Electrical and Computer Engineering  
University of Birmingham, Birmingham, B15 2TT, UK.

### **Summary of project**

The purpose of this project is to develop new mathematical models which characterise the acoustic properties of regional accents of British English and the relationships between them, and to investigate the application of these models to accent-robust automatic speech recognition, accent identification, and non-native accent detection. Initially the project will use the "Accents of the British Isles" (ABI-1 and ABI-2) corpora of read and conversational speech, moving on to consider accented telephone conversational speech as suitable corpora become available.

The first task will be to establish 'baselines' for accent identification and recognition of accented speech. This will include measurement of human accent identification performance, and the effect of accent on human speech recognition of read and spontaneous speech. At the same time, the 'strengths' of the accents of speakers in the ABI corpora will be measured subjectively. Conventional language identification techniques will be applied to the problem of accent identification, and automatic speech recognition (ASR) experiments will be conducted to measure the effect of accent on ASR performance, and to measure the utility of conventional adaptation schemes for accent adaptation.

The next stage will be the development of self-organising topological maps of accent data. The objective is to understand relationships between acoustic representations of accent, and to see how this correlates with geographical or historical relationships. Once these maps have been developed, their utility for accent ID and for accent adaptation of acoustic models for ASR will be measured.

Another important topic is accent adaptation of pronunciation dictionaries for ASR

Further topics include the detection of non-native-English accents in the context of general British English. The goal is to study how non-native speakers are mapped onto the topological maps described above, and in particular to determine whether it is possible to detect non-native speakers reliably. Finally the project will consider 'compound' accents: Most talkers' speech is not 'single-accent'. Instead their voice is influenced by a number of different regional accents. The purpose of this task is to determine whether it is possible to detect these compound accents and decompose them into their component streams.

Funding to cover maintenance (at standard EPSRC studentship level) and home/EU fees is available for this project.

For further information please contact Professor Martin Russell ([m.j.russell@bham.ac.uk](mailto:m.j.russell@bham.ac.uk))