Glasgow University Laboratory of Phonetics Colloquium

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'Approaches to defining the relevant population in Forensic Voice Comparison: can the DNA model work for speech?'

In Forensic Voice Comparison (FVC) casework, an expert is asked to perform an analysis of a recording of the voice of an unknown criminal (e.g. telephone fraud/ bomb threat) and a recording of a known suspect (e.g. police interview), to assist the Court in deciding whether the samples contain the voice of the same or different individual(s). Across forensic sciences, there is a move towards the evaluation of such expert comparison evidence in the form of a probabilistic statement of similarity and typicality known as the likelihood ratio (LR) – the framework which is currently used for the evaluation of forensic DNA evidence. The typicality element is dependent on patterns in what is called the relevant population and quantified using a sample of data from that relevant population.

This talk explores how the relevant population is defined for DNA and how the complexity and multidimensionality of language variation makes the direct application of this approach difficult for speech evidence. I consider how the relevant population is currently defined in FVC, and assess the relative merits of these approaches with reference to empirical data. Finally, I propose three alternative ways in which the relevant population may be defined in FVC, based on elements of current practise in DNA analysis and procedures applied by automatic speaker recognition systems: (i) presentation of multiple LRs based on different definitions of the relevant population, (ii) mathematical normalisation of variation in sub-populations and (iii) speaker-similarity based on objective analysis of the speech signal.