

## METHOD FOR IDENTIFYING TALKERS FROM ACOUSTIC SPEECH ANALYSIS

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A four vector semi-automatic speaker identification system (SAUSI) has been described (Proc. IEEE: ASSP, 1977, 768-771); the SYSTEM NOW EMPLOYS SIX MAJOR VECTORS. In order to evaluate the validity of a system such as this one, the vectors must be tested by a large number of protocols both singly and in groups. In order to permit such testing, we have generated a very large database grouped into three general categories: laboratory, field simulation and field; they include: 1) normal speech produced in two languages by large populations of subjects, 2) laboratory quality speech produced as a function of stress and disguise, 3) high quality "field" speech (transmitted by radio) produced under stress, 4) speech produced by talkers of different dialects plus dialect imitators, 5) speech produced over telephone links -- included is normal speech and a variety of controlled disguises and 6) simu-crimes recorded in the field. Virtually all of the over 1000 sample-sets are of male talkers; however the category No. 5 includes 25 women.

The six vectors currently utilized are generated from 11-60 parameters each; they include: 1) fundamental frequency (17-25 parameters), 2) power spectra (11-23 parameters), 3) vowel formants (32-45 parameters), 4) phoneme structure (60 parameters), 5) vocal jitter (variable parameters), 6) temporal features (15-24 parameters). The first two and the last vectors have been subjected to considerable laboratory analysis -- for both large and small populations and under both ideal and distorted speech conditions. Some testing of the other vectors and of combinations of vectors also has been carried out. The results have been encouraging and experiments currently are under way evaluating the identification power of the combined vectors.