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Automatic Speaker and Speech Recognition

For embedded systems

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Automatic speech recognition and speaker recognition have a lot of applications in personal identification, access control and in the new man-machine-interface paradigm. The existing applications in voice-activated embedded systems solve the problem of recognition of the spoken words only or the problem of recognition of a speaker through the words uttered only. The goal of this project, therefore, is the development of a robust algorithm for both speech recognition and speaker verification. An example of a target application of this work is speech dialing of mobile phones with a speaker verification front-end in order to effect access control. In view of the memory and computational constraints of embedded systems, the dynamic time warping algorithm is used. This project only considers isolated spoken digits. The developed algorithm is coded in C language and can be ported to firmware for Arabic numeral digit recognition with a speaker verification front end for an embedded system like mobile phones. The system produced a FAR of 13.33% and a FRR of 24.3% for a total of 70 true claims and 30 false claims. It also had a word accuracy of 96.7%.



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Joke Badejo is a researcher with EIE Biometrics Research cluster in the Department of Elect.&Info Engrg., Covenant University, Nigeria. She holds M.Eng in Computer Engineering and is currently pursuing a PhD in the area of Iris Recognition. Her research interests include Image Processing, Digital signal processing and Software Engineering



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