Speech Separation using Fast ICA Method for Home Automation

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Abstract: The evolution and development in home automation is moving forward towards the future in creating the ideal smart homes environment. Optionally, home automation system design also has been developed for certain situation for those who need a special attention such as elderly person, sick patients and handicapped person. This project deals with the home automation systems, in which the speech recognized by the system becomes the basis for performing certain tasks. If a target source (i.e. a speech signal) is mixed with another sound due to simultaneous occurrence, the system would generate poor recognition results, subsequently leading to inappropriate responses. To avoid this improper condition this project consists of speech separation process for triggering appliances. In the separation phase, the Fast ICA process is used which removes the noise and yields noiseless signal. The SIR and fisher score can be measured for accuracy. Finally, this speech signal can be selected for triggering automated services.