



Successful rate of voice controlled switches in the noisy environment: Original, tube, absorption cloth, and combination

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Abstract:

Statement of the Problem: In a noisy environment, the successful rate (SR) of a voice controlled switches (VCS) is not easy to operate well. Therefore, we tried to add a tube, an absorption clothes, and their combination in front of the microphone of the voice recognition module for SR improvement. A voice recognition module connected with Arduino microcontroller which assigned the switches to turn on or off by the instructions of the user's voice. The siren of ambulance is a stable voice and suitable for an example of noise. The experiment was designed by the stable voice (60~65 dB) over the variable noises (35~55 dB). The voices and siren sound was measured by a mobile application (APP) of Decibel tester. The SNRs are: (a) 20 to 30 dB; (b) 10 to 20 dB; (c) 5 to 15 dB and the color bars present the SRs (50 tests) of original condition (blue), adding a tube (red), adding an absorption cloth (green), and combination of adding tube and cloth (purple) in the following figure where H means the voice instruction of "Higher temperature", "Lower temperature" and "Stop" in Chinese. The findings of the SR of voice control presented that the SNR over 10 dB performs almost 100% SR. The normal human voices are around 60 dB, however, the distance between mouth and microphone should be considered. The common environmental noise in a house is in the range of 40 to 50 dB. Therefore, it is very easy to achieve the SNR>10 dB. The performance is close to the previous studies. Consequently, the system works in general cases. Conclusion & Significance: This study attempted to use accessories for improving the SR. However, the performance is not obvious. Therefore, we will study to modify the shape of tube and the absorption cloth.



Biography:

Bing-Yuh Lu is a professor with Faculty of Automation, GDPET, Guangdong .China. He focused on the researches of biomedical engineering, applications of microprocessor, computer simulation and modelling. He is a member of IEEE and has served as a reviewer for some journals.

Publication of speakers:

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