An FPGA Based Real-time Assistance System for Blinds

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Blinds are part of our society and they are suffering from several problems that s why the humanity managed to solve some of their numerous problems but I noticed that blinds can t yet enjoy the shopping experience because there are always accompanied with a normal person or they request assistance from the other customers or from the market employees. That s why I made this research in order to find a solution to allow blinds (including color-blinds) and visually impaired people to do shopping without assistance and without facing problems, the system will guide the deaf user to estimated products using voice commands ,Identify products and their prices, calculate the total price of selected products and also for those who have colorblindness and completely vision loss the system will identify for them the color of the any product in the supermarket and especially the clothes and ripe fruit or vegetables because this category have no chance to differentiate between colors without any help. The audio tracks are stored in the memory, to gain more space I have implemented the Huffman compression and coding algorithm thus I was able to save about 75% of the original size without loss of data .From the results conducted from the prototype , the users can accomplish their shopping without assistance and the system was able to locate and identify all the information of the desired products using bar-code technology, in the other hand the invention performed in identifying the colors to color-blinds and those who have completely vision loss. For the future I will improve thefunctionalists of the system and its design by converting the FPGA design into structured ASIC design.

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