

Augmented Hearing Device for the Elderly

Introduction

The Augmented Hearing Device for the Elderly is a set of headphones that, as the name states, functions similarly to a hearing aid for those who have had hearing damage or have lost their hearing due to age. However, these headphones are not conventional hearing aids, as they have the capability to be much more powerful than normal hearing aids. Some of the key problems with hearing aids include the fact that they can be expensive, have poor performance, and are very intrusive. My prototype is made to alleviate these problems, as it was made using inexpensive materials, has high-quality performance, and is made using pieces that are already commonly worn.

Materials & Methods

- 2 Hearing Amplifiers
- 1 Construction Headphone
- 1 Electronic Headphone
- 3 Small Breadboards
- 1 Switch

To create these headphones, I first disassembled the electronic headphone into the components of its speakers and wiring, and fit the speakers into the headphone cups of the construction headphones. This is to ensure that the same outside noise does not get replicated, as the construction headphones are virtually noise-proof. Next, as shown in the pictures on the right, I wired the breadboards to connect to the headphones and make the headphones function the way they do. Lastly, a switch was added to save power, and the headphones were then tested.

To test the headphones, I had an assistant stand at the opposite end of a room in relation to myself. I had that assistant speak at a normal level and tested to see at what distance I would be able to hear them. It quickly became clear that a room was not going to cut it, so we tested in an empty corridor.

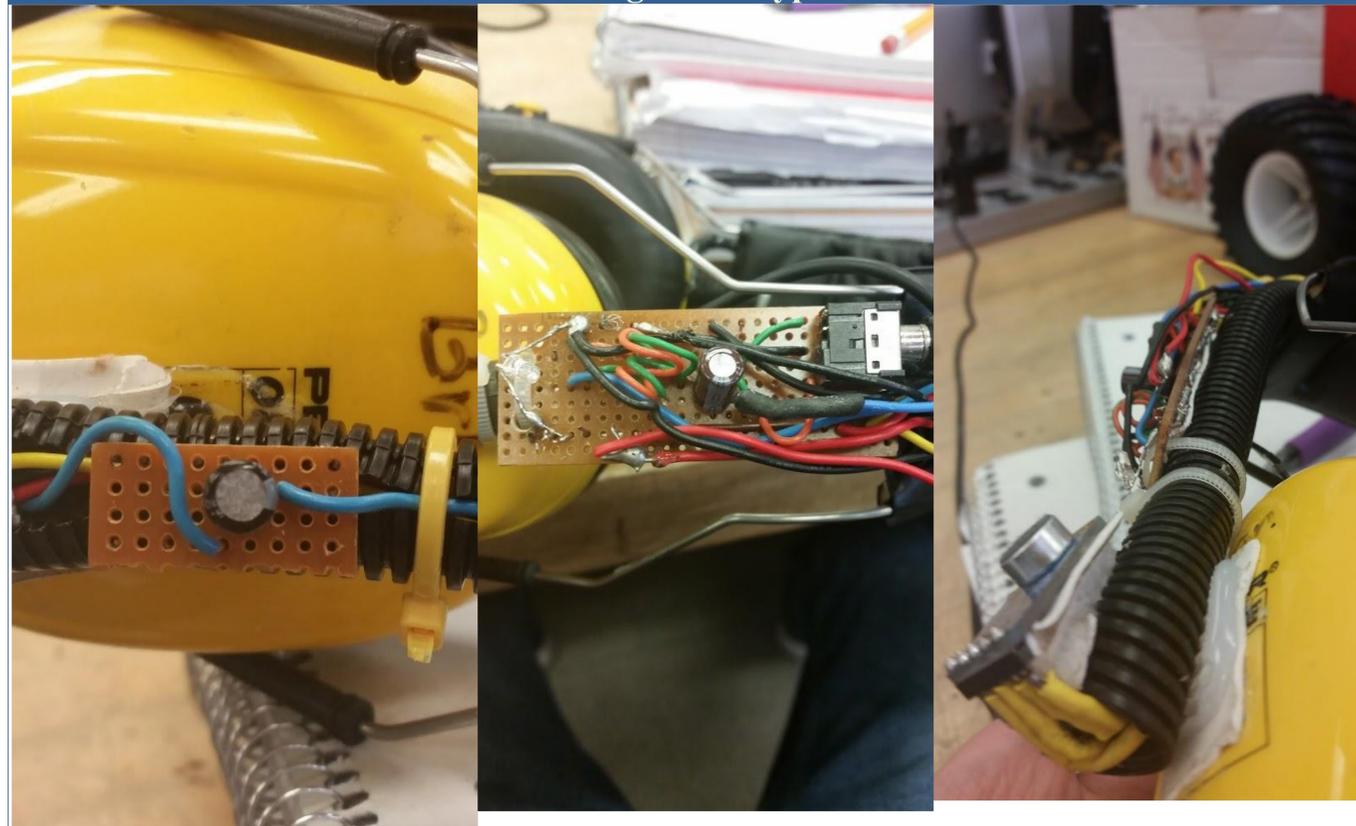
Results

Through testing, I concluded that the headphones have an effective hearing range of 50 feet. When the headphones are off, it is very difficult to hear anything because of the hearing blockage of the construction headphones. When the headphones are on, it is very easy to hear everything surrounding the headphones. One of the struggles with these headphones is the lack of volume adjustment, so it is very difficult, for example, to hear someone speaking in the background when there is someone speaking in the foreground at the same time. This is a problem regardless, but it is accentuated by the fact that there is a lack of volume control on this prototype. Overall, the results in testing were successful, with the only problem being a lack of volume control.

Conclusion

In conclusion, I was able to successfully create a prototype for my augmented hearing device. This prototype is extremely powerful, and has extreme functionality for those who might need it. This prototype is superior to the conventional hearing aid as it is less obtrusive, has a longer range, and has greater functionality. These results were very successful, and made it so that another student was able to create a second prototype. The headphones allow the user to hear up to 50 feet at a normal speaking volume, which is an incredible distance for one to hear.

Design Prototype



Future Modifications

A second prototype was made by a student last year that used a sleeker frame and had more functionality, like volume control and earbuds. However, this prototype was not made by me, so it is not on display right now. The modifications made to this prototype would be the modifications I would make to this prototype as of now. The functionality of these headphones would be improved by these modifications, as it would make them easier to use and provide more control for the user over the sounds they would like to hear. Overall, the modifications made to this second prototype are the exact modifications I would make to the Augmented Hearing Device.

Contact Information

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References

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Acknowledgements

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