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Making Way for Clearer Sound

Barbara Little
Alliance High School

Jacob Stearn
Alliance High School

Jake Elsewhere
Alliance High School

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Making Way for Clearer Sound

Team Alliance
Barbara Little, Jacob Stearn, Jake Elsewhere

Portland State
UNIVERSITY

Maseeh College of Engineering
and Computer Science

PROBLEM/OPPORTUNITY

Problem: Hearing aids are posing difficulties for the elderly using them because of several factors. One of these factors is the filtering of background noise. Many affordable hearing aids on the market today do not produce quality sound because of inferior filtering of background noises.

Opportunity: Our team didn't understand why this is still a problem since we have the technology currently that is capable of solving this. For instance, we have microphones and speakers that filter out background noise by removing or lessening it.

After some research we found that Google Glass is working on a prototype of something similar to this, using vibrations on the back of the ear to produce sounds for the user. However, this technology is only available as part of the Google Glass unit, which includes a personal computer, apps, etc. These extra features make Google Glass and their future prototype both expensive and imposing for the older generation. Therefore, making something simpler, cheaper, and user friendly would be desired.

**Fig. 1 Left: Google Glass,
Right: Google Hearing Aids and App**

http://www.glassappsource.com/listing/mashable-velocity-glass-app

http://www.treehugger.com/gadgets/new-hearing-aids-are-google-glass-ears.html

"Can you hear me now?" –Version Wireless

http://www.businessweek.com/articles/2013-06-06/why-do-hearing-aids-cost-more-than-laptops

HUMAN IMPACT

This product would be more accessible to the elderly generation because it would be comfortable for the user, less expensive than the alternative Google Glass product, and more appealing because it would produce cleaner sound than regular hearing aids. It would also be more enjoyable than wearing average hearing aids because it would blend in more and look like a simple pair of glasses.

Fig. 2 Vibration Hearing Aids

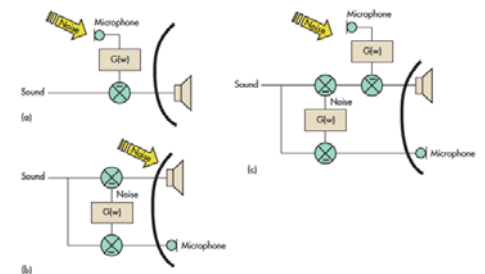http://www.cochlea.org/en/treatments/hearing-aids
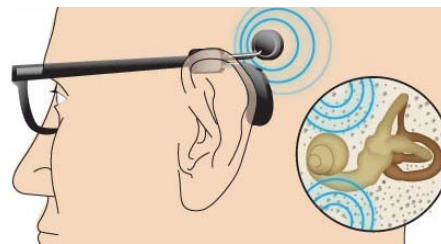
SOLUTION

We took some of Google Glass's ideas and implemented them into our design as well as using the technology we already knew existed and incorporating it into one product.

We found that filtering sound with a microphone involves two microphones, one that picks up on the different levels of noise, and a secondary one that picks up the background noise. This secondary one takes the noise and lessens or removes it entirely. We also saw an opportunity in using a microphone that, instead of emitting sounds, sends vibrations into the skull above the ear and allows the brain to pick it up as sound.

Our product would implement less technology (compared to Google Glasses) to lower the cost point, therefore making it more accessible to the elderly generation

This design would be available independently as just empty frames or in the form of prescription glasses.

Fig. 3 Noise Cancelling Microphones

http://electronicdesign.com