

Smart Hearing Aid Device

Status: Filled

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Sponsor(s):

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Project Description

Introduction

The global market for hearing aids is expected to grow by 4.6% for the next 5 years to reach a value of \$5,440.5 million USD by 2020. As of 2013 as estimated 4.6 million Canadians aged 20 to 79 used hearing aids. The main problem is that the prices of hearing aids are extremely high, averaging about \$2000 per device in retail.

Two potential directions are explored for our device. First, a more affordable device. As mentioned earlier hearing aids can be quite expensive and by being a cost leader could open us up to target different customers (ie. kids who have to purchase multiple hearing aids as they grow or developing countries). Second is a more flexible and convenient hearing aid that doesn't require molding to an individual's ear. A comfortable device that needs little maintenance, looks good, and has smart features.

Project Outline

1. Hearing aid device that utilizes sensors with an algorithm that automatically manipulate the signal in real time.
2. Convenient and appealing look that is also reliable in terms of battery life and environmental conditions.
3. Easy user control for different settings such as via smart phone connectivity.

Expected Outcomes

After the completion of capstone we aim to finish a prototype that has working desired functionalities. The device may still be bulky and not fully optimized for market ready product. Suggestions for future improvements will be made in future design iterations.

Tasks

Background

- Research cost structure of current devices
- Research more about the technology development methods(digital or analogue)
- Research international policy on hearing aid devices
- Research which processes/overheads contribute the most to the device cost (including sale structures, insurance, liability claims etc)

Business

- Research into finding ways to “recycle” device and resize for a growing ear (or if ear shapes change or for better comfort). Possibilities to salvage the electric bits and remold the device for keeping costs lower or by offering a subscription to tie in a customer for their entire life

Device

- Fabricate electronic bits for device
- Fabricate mold

Algorithm

- Noise cancellation feature algorithm
- Program microchip that controls real time signal processing

App

- Design interface for app
- App controls volume, noise cancellation feature, gives notifications for low battery, (maybe give stats, number of calls received, door bells rings etc), etc

Timeline

December : Finish research

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