

# DSAA PROJECT PROPOSAL

## GROUP-51

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## DIGITAL HEARING AIDS

### **Problem Statement:**

Approximately 10% of the world's population (760 million people) suffers from some level of hearing loss, yet only a small percentage of this statistic use a hearing aid. A hearing aid has three basic parts: a microphone, amplifier, and speaker. The hearing aid receives sound through a microphone, which converts the sound waves to electrical signals and sends them to an amplifier. The amplifier increases the power of the signals and then sends them to the ear through a speaker. The traditional hearing aids are of two types:

1) Analog: Analog aids convert sound waves into electrical signals which are then amplified.  
2) Digital: Digital aids convert sound waves into numerical codes before amplifying them. Since the code also includes information about a sound's pitch or loudness, the digital aid can be specially programmed to perform certain functions on the input audio signal like noise reduction, signal refining etc. Therefore, A digital hearing aid is more advantageous than an analog aid.

### **Existing Solution:**

There are various types of analog hearing aids in use around the world. Even though there are some digital hearing aids available in the market, they are not that prevalent yet.

### **Proposed Solution:**

For this project, we'll be designing a digital hearing aid system which is far more superior and convenient than the Analog ones. We plan to perform functions such as noise reduction, signal refining, amplification of significant frequencies etc using audio processing techniques in matlab to amplify the audio signal and make it more comprehensible to the hearing-impaired person.

### **Evaluation Criteria:**

- Clarity and Amplification of the output signal.