# Project Help

MATLAB commands to use to load in and play sound files:

- audioread
- sound

Sound file formats that are accepted / readable:

- .wav
- .m4a
- .mp3
- .avi

Additional answers from Dr. Goldworthy

I compiled the remaining interview questions with some rephrasing, and here was his response (I've attached the article he sent):

Hi Debbie,

I attach an article by a colleague of mine (I am a co-author)**Zaltz et al 2018 Voice.pdf (https://calstatela.instructure.com/courses/70086/files/10680674?wrap=1)** . The introduction discusses some of the acoustic cues for speaker discrimination including fundamental frequency and formant cues associated with vocal tract length.

The primary challenge for voice to text algorithms, in my opinion, is performance in adverse environments (background noise and reverberation). Most CI users do well in quiet, so most do not need voice to text in quiet, but would benefit from a robust system in noisy and reverberant environments. Although, there are poor performers who would benefit in quiet situations, too.

So, for your questions 4 through 8, it depends on the listener. For me, I would benefit from a system that works well in noise. Trying to understand a waiter at a restaurant, especially if the waiter is masked, comes to mind. I would find it a 5 in that situation. Some CI users would find it useful in a doctor’s office or other quiet environment if the other people are masked, though I do well in those situations.

The readability is important, but I suspect it would run well on a smart phone. I recall Google Translate working well.

I didn't think twice about getting the cochlear implant. I went from having normal hearing to being completely deaf, so when my family heard about the pediatric trials for the cochlear implant, we all agreed it was the way to go. The people who oppose it are generally members of the capital D Deaf community who live together as a tight social network. They feel threatened by the cochlear implant as it makes someone who is Deaf into someone who is seeking to be in the mainstream. That is quite a cultural controversy that I seldom interact with….

Hope that helps…Ray

On Apr 15, 2022, at 1:47 PM, Won, Deborah S. <**dwon@exchange.calstatela.edu (mailto:dwon@exchange.calstatela.edu)** > wrote:

Dear Dr. Goldsworthy,

I hope you received the Barnes & Nobles e-gift card that should have been e-mailed to you last week. We really enjoyed hearing and learning from you!

The students did have some questions I was supposed to pass on to you. If you have time to answer any of them, that would be great, don't feel obligated to answer all or any!

1) How do cochlear implants (CI) differentiate / modulate loudness of sounds?

2) How do cochlear implants (CI) differentiate / modulate depth of people's voices ("high-pitched" vs "low-pitched) – it seems that phonemes are defined by the spectrum (like a spectral profile) but how do those phonemes differ between people with deep voices vs high voices?

3) What are the main difficulties that come with algorithms that translate speech? Would it be pronunciation? (different accents, for example)

4) For people with hearing loss, how would you rate on a scale from 1-5, how useful a speech-to-text display would be? (1 being the least important, 5 most important). Where/in what context would a speech to text program be most useful?

5) Continuing with #4: On a scale from 1-5 how important is the speed to display the text on the screen? (1 being the least important) and what would be the tolerance for timing differences?

6) On a scale from 1-5 how important is the visual aesthetics and/or readability on the screen? (1 being the least important) (including background color and contrast of background with text)

7) What other features/design suggestions can you think of for a speech to text program?

8) What factors made you decide to get a cochlear implant? Are there people with hearing loss who are against getting a cochlear implant and what are the major reasons?

Best regards,
Debbie

Team Partners

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|---|---|
| Giang, Dat | Sanchez Varela, Eyleen |
| Sercel, Gregory | Tan, Jarred |
| Nguyen, Janice | Rodriguez, Augusto |
| Nguyen, Kirk | Evans, Cj |
| Boby, Farzana Yasmin | Mota, Cristian |
| Maravilla, Andrew | Castro, Jayson |
| Guillen, Fernando | Ornedo, Lynel |
| Bugarin, Everardo | Blanco, Stacy |
| Noriega Meraz, Manuel | Cortez, Richard |
| Sital Figueroa, Ismael | Zapata, Raul |
| Huynh, Anthony | Morales, Christopher |
| Tran, Jeffrey | Villalobos, Esteban |