

uHearingTest - Mobile-based Hearing Apps

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BACKGROUND

According to World Health Organization, over 5% of the world's population – 360 million people – has disabling hearing loss (328 million adults and 32 million children). The majority of people with disabling hearing loss live in low- and middle-income countries. Even in the developed country like US, fewer than 20 percent seek professional help. Many hearing-impaired (HI) individuals wait 10 years or more before obtaining hearing aids (HAs), waiting until the hearing loss is moderate to severe before seeking intervention. It is unclear why so few people with hearing loss seek help. People may be unaware of the extent of their hearing loss and/or the benefit of intervention, or may be put off by the cost and/or inconvenience associated with clinical assessments. Because many people have access to mobile devices (smartphones, tablets, etc.), this technology may be leveraged to increase awareness of hearing status and the benefits of intervention, thereby motivating people to seek clinical help.

uHearingTest is an hearing assessment tool which provides an efficient and user friendly way to assess listener's hearing sensitivity. The threshold of six pure tones with different frequencies (250, 500, 1k, 2k, 4k, 8k) will be measured adaptively. The program provides the individual users' Hearing Level (HL) (reference to general normal-hearing listeners) at the end of the test. The program allows the listener to quickly find out his/her hearing sensitivity compared to other normal-hearing listeners. The original uHearingTest was developed by *William Fu* and his team (WooFuTech) under the guidance of Dr. *Qian-Jie Fu* (UCLA) in 2014. The uHearingTest won the first prize for the 2014 UCLA Code for the Mission Contest Service Category: Tackling the Big Health Problems. The app has been downloaded by over 10K users and has received excellent reviews.

MOTIVATION

While iOS and Android operating systems combined for 98.4 percent worldwide market share of mobile devices, iOS devices account for only half the market share. There is a great need to develop an Android-based hearing test app, especially for the underdeveloped countries. Similarly, only 20% of the world's population speaks English (~1.5 billion people including both L-1 and L-2 speakers). Other widely-spoken languages include Mandarin Chinese (~1.1 billion) and Spanish (~560 million). There is a great need to develop language-specific hearing health apps. The goal of the proposed hearing app development project is to develop a battery of self-administered, automated hearing tests using mobile technology for both iOS and Android operating systems with multi-language supports.

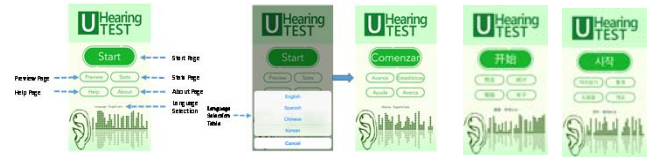
INNOVATIONS

The completely redesigned uHearingTest included the following new features and functionalities in addition to the features and functions in the original uHearingTest app.:

- Multi-language support. Current version covers four languages (English, Chinese, Spanish and Korean).
- Multi-user support.
- New iOS database structure for better data management.
- New testing protocols to match the clinic audiological measures.
- New help menu.
- New animation at various pages.
- New automatic background noise detection during testing;
- Self-administrated automated mode (Test mode) and traditional audiometric mode (Preview mode);

App Screenshots and Feature Descriptions

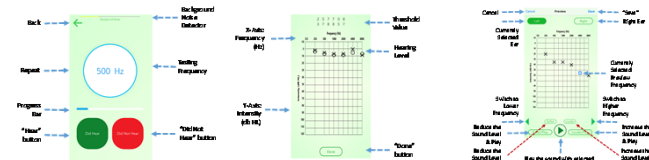
1. "Main" Page



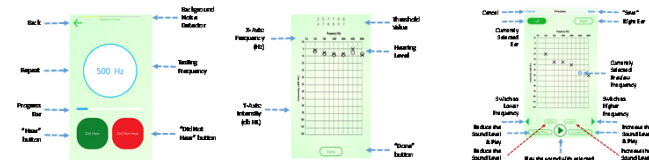
2. "Start" Page



3. "Test" Page



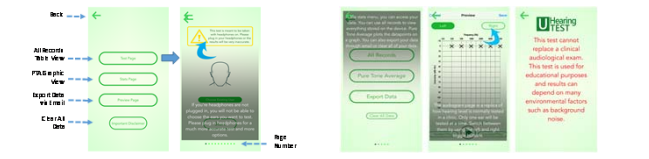
4. "Preview" Page



5. "Stats" Page



6. "Help" Page



7. "About" Page



DOWNLOADS

<https://itunes.apple.com/us/app/uhearingtest/id916059791?mt=8> <https://play.google.com/store/apps/details?id=com.woofutech.hackwfu.uhearingtest>

