

1234: CCI-MOBILE: OPEN-SOURCE APP DEVELOPMENT FOR REAL-TIME COCHLEAR IMPLANT PARAMETER ADJUSTMENT USING THE CCI-MOBILE RESEARCH PLATFORM

Avamarie Brueggeman, Hussnain Ali, John H. L. Hansen

Cochlear Implant Processing Laboratory, University of Texas at Dallas, Richardson, TX, USA

In this study, we present a versatile Android app capable of real-time cochlear implant (CI) processing and parameter customization for the CCI-MOBILE research platform. This research platform, created at CRSS-CILab, is a powerful and portable interface designed for conducting diverse listening experiments with CI, hearing aid (HA), and bimodal (CI/HA) subjects. The addition of an open-source Android app enables researchers to easily perform on-the-go field tests in real-life environments, requiring only an Android device (i.e., smartphone or tablet) and the CCI-MOBILE. The Android app enables its device to work as a portable sound processor which provides flexibility to researchers through a widely known, affordable, and commercially available interface. In addition, the familiarity of the general public with Android products makes this platform especially suitable for take-home testing with CI/HA users.

This app serves as a general foundation for which researchers can customize to suit any particular research/scenario need. The software is written in Java using Android Studio, with the user interface defined using XML, and the CI user MAPs are formatted using JSON. Basic app functionality includes real-time adjustment of CI parameters (e.g., stimulation rate, pulse width, volume), selecting and saving MAPs to and from the device, start and stop functions for streaming with the CCI-MOBILE, and a quick-select menu for accessing researcher-defined presets (e.g., environment settings such as in the car, at work, music). The open-source app is currently hosted on GitHub and will be available for free on the Google Play Store. In our presentation, we highlight features, user controls, and researcher programming/modification options.

This work was supported by Grant No. R01 DC016839-02 from the National Institute on Deafness and Other Communication Disorders, National Institutes of Health, and by the National Science Foundation Graduate Research Fellowship under Grant No. 1746053 (Brueggeman).