1488: LEVERAGING CLOUD COMPUTING RESOURCES TO ENHANCE CCI-MOBILE FUNCTIONALITY

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CCi-MOBILE is a software and hardware-based sound research platform intended to support the cochlear implant research community for both technology-based algorithm advancements, as well as scientific research studies. The research platform supports both in-lab/benchtop testing as well as take-home evaluation for naturalistic field studies. CCi-MOBILE currently supports both CI and hearing aid (HA) studies in unilateral, bilateral, and bimodal scenarios, and is compatible with clinical devices manufactured by Cochlear Corporation. To expand access and functionality of this research platform, a cloud-based infrastructure is proposed to leverage remote applications and to support remote opportunities. The goal is to expand access for CCi-MOBILE users as a laboratory community resource, including the current signal processing user base, and contribute to provide a mechanism to bring researchers and CI users together for improve interaction among current CCi-MOBILE users. This long-term effort is to develop a next-generation, flexible, open source, portable speech processor platform to be shared with the CI research community in a virtual/online manner. The cloud platform is categorized into 3 primary subsets: (1) data sharing among collaborating research institutions, (2) remote/virtual experimentation and data collection among researchers and CI participants, and (3) online crowdsourcing to promote CCi-MOBILE in both research and naturalistic field scenarios. Additionally, we aim to develop a secure, cloud-based service where researchers can share code and data complying with standard formats. In this work, the infrastructure of one of the subsets ‘CCi-Evaluate’ will be presented. This is the most challenging subset area in terms of infrastructure as it requires flexibility in adaptation to a variety of applications, tools, and algorithms developed within the research community. Examples of CCi-Evaluate will be provided to demonstrate a pipeline for conducting subject-experiments remotely utilizing Amazon Web Services (AWS) which offers many reliable and scalable cloud computing solutions. Several AWS applications such as Workspaces, AppStream, and AWS WorkDocs will be provided.

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