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

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1. INTRODUCTION

CCi-MOBILE Research Platform

- CCi-MOBILE is a software- and hardware-based research platform intended to support the CI research community for algorithmic advancements as well as scientific research studies

Cloud-Based Platform

- In this work, a Cloud-based architecture is proposed to leverage remote applications and to support remote testing capabilities
- The goal is to **expand access** for CCi-MOBILE users as a laboratory community resource including the current signal processing user base and **provide** a mechanism to bring researchers and CI users together for improved interaction among current CCi-MOBILE users

2. CLOUD SUBSETS

CCi-CLOUD (Cloud-Based Platform for CCi-MOBLE)

- Cloud computing platforms such as Amazon Web Services (AWS) utilized to develop CCi-CLOUD infrastructure
- CCi-Cloud can be categorized into three primary subsets:

1. **CCi-Evaluate:** Remote and/or virtual experimentation and data collection among researchers and CI participants
2. **CCi-Share:** Online data sharing among collaborating research institutions and/or other CCi-MOBILE users; i.e., comparable infrastructure to cloud architectures such as Outlook's OneDrive or Google Drives
3. **CCi-Connect:** Online crowdsourcing to promote CCi-MOBILE in both laboratory-based research and naturalistic field studies accessible to the researcher and participants (hearing aid, cochlear implant users, etc.)

Fig 1. CCi-MOBILE Research Platform.

3. CLOUD INFRASTRUCTURE AND FUNCTIONALITY

CCi-Evaluate:

- Remote Desktop supporting remote experimentation
- Longitudinal Testing
- Auditory Training
- Real-time signal processing

CCi-Share:

- Datalogging
- Comparable to "Google Drive" and/or "OneDrive"
- Collaborative Space
- Real-time signal processing

CCi-Connect:

- Website/portal with available resources for new & existing members of CI community

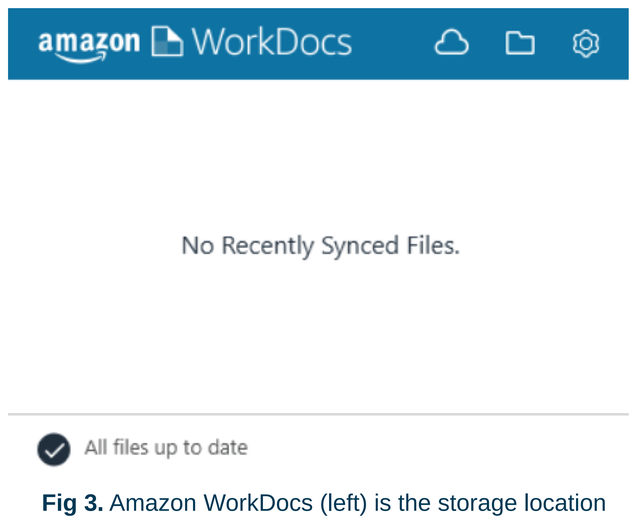


Fig 3. Amazon WorkDocs (left) is the storage location shared among collaborating research institutions.

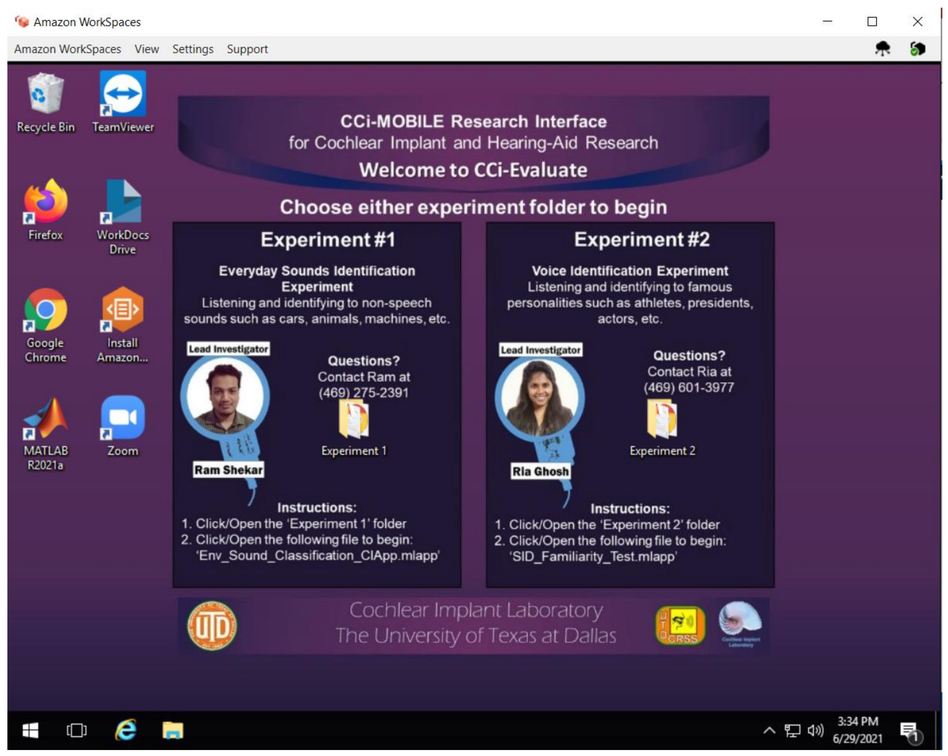


Fig 2. Amazon Workspaces remote Desktop supporting remote experimentation among participants.

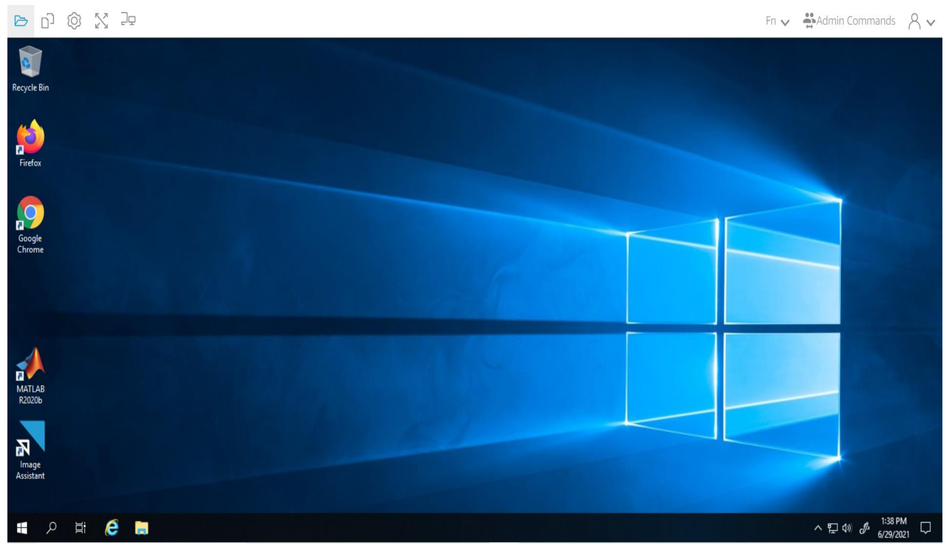


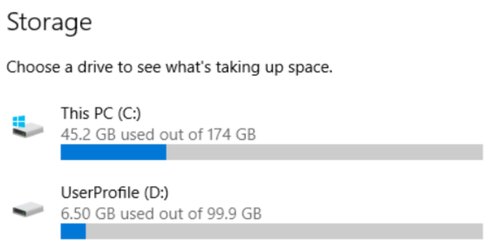
Fig 4. Amazon AppStream remote server supporting application streaming through AWS backend servers.

4. OPERATING SPECIFICATIONS

- Operating specifications for CCi-Evaluate (Cloud or remote computer) are listed below:

Processor	Intel(R) Xeon(R) Platinum 8259CL CPU @ 2.50GHz 2.50 GHz
Installed RAM	16.0 GB (15.8 GB usable)
System type	64-bit operating system, x64-based processor

- The allocated storage specifications for the CCi-Evaluate are listed to the right:



5. CONCLUSIONS

- CCi-MOBILE is an open-source, flexible research platform compatible with cochlear implants and hearing aids – readily available to the research community
- CCi-CLOUD is a cloud-based platform developed to support remote experimentation and collaboration among CI users and researchers
- The scalable Cloud platform supports various programming languages such as Python, JAVA, and MATLAB as well as integration opportunities for custom signal/sound processing strategies

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