

# RESEARCH PROPOSAL

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**OBJECTIVE:** To secure a mobile cloud environment that focuses on educational content.

## INTRODUCTION

Cloud computing allows sharing of information without users investing too much money in under-used resources. One can access data remotely that is stored on a server (e.g. Google Drive, Dropbox, iCloud). Mobile cloud computing is cloud computing where a mobile device is involved. There is a move to make use of mobile devices that can actually deliver cloud computing services in an ad hoc configuration without use of large data centers. This would be helpful in special circumstances such as in locations without an internet provider. This project will demonstrate application of an educational use scenario and identify security measures necessary to deliver the education content within a mobile cloud computing environment.

## IMPORTANCE:

Mobile clouds are useful where no internet exists and for people on the go. To make the clouds more practical, security needs to be present. K12 and higher education require essential security measures to guarantee delivery, availability of information and confidentiality of participants in virtual education environments. For this reason, it is important to identify the hardware and software technology that will make it possible to ensure authentic educational content and privacy of the users' personal data.

## RELATED WORKS:

In a master's thesis completed by W. Fuller at Norfolk State University, two android devices were used to create a mobile cloud web server and storage environment in order to demonstrate its feasibility. This is proof that a mobile cloud can be built using the mobile devices as servers [2]. This research project is an extension of the work performed by Fuller.

G. Huerta-Canepa and D. Lee developed a mobile cloud network configuration where the user was at a fixed location. When a computing task was required and insufficient resources were unavailable, the system listened for ad hoc nodes in its current vicinity [1]. This research project,

however, does not require the user to be in a fixed location and in fact demonstrates the advantage of being in separate various locations when using a mobile cloud.

Education on mobile clouds has some great benefits. For scalability, the deployment of mobile applications can be performed and scaled to meet the unpredictable user demands due to flexible resource provisioning. Service providers can easily add and expand an application and service without or with little constraint on the resource usage. A specific example of MCC applications in learning is “Cornucopia” implemented for researchers of undergraduate genetics students and “Plantations Pathfinder” designed to supply information and provide a collaboration space for visitors when they visit the gardens [4].

Another type of mobile cloud computing education model was developed where experts can put tutorials on the cloud for students to use. A similar concept could be used in this project where security is tested on the cloud for people (such as experts and tutors) who are outside the cloud [6].

## **METHODS AND TIMELINE:**

Tools:

This research project requires use of an Android smartphone and an Android tablet. The software will be used are Serversman and WebDAV, two software applications available on the Android market but also available for other mobile device platforms.

Procedure:

The mobile cloud environment will be replicated by installing Serversman on the phone, installing WebDAV on the tablet, and linking the latter program to the former. After the initial setup, security measures (delivery, availability of information and confidentiality) will be configured into the mobile cloud. A prototype educational tool will be deployed in the mobile cloud environment. Finally, testing of various actions on the two mobile cloud devices will be performed and documented.

Timeline:

The table below provides the targeted deadlines for various tasks required to complete the project and document the findings.

Week 1	REU Logistics; acquire project description; find background material on mobile cloud.
Week 2	Background Reading on Mobile Cloud and its use on Education
Week 3	Acquire Mobile Devices & Rebuild Mobile Client & Server; Create Website
Week 4	Add Educational Content to Mobile Cloud, Test & Gather Results
Week 5	Add security to Mobile Cloud, and test and gather results
Week 6	Experiment with mobile cloud implementation; produce tables and graphs
Week 7	Analyze data
Week 8	Final Paper
Week 9	Complete Website
Week 10	Complete Website and Finish any Final Touches

## REFERENCES

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