MASTER'S PROJECT (SPRING 2013)

TOPIC: *Prototyping an iOS-based E-Learning Application Using Mobile Cloud Computing*

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ADVISOR: Dr. Haiping Xu

DATE & TIME: ~~Friday, April 19, 2013, 3:00PM~~ Friday, April 26, 2013, 11:10AM

LOCATION: CR3, Woodland Commons

COMMITTEE MEMBERS: Dr. Vinod Vokkarane and Dr. Ramprasad Bala

ABSTRACT

The popularity of e-learning, including online courses, degrees, and online-only educational programs, has increased dramatically in the past few years. Many people are attracted to the convenience and ease with which the distance learning is made possible. A busy person can learn about any subject from home, while travelling, or at work. While many of these programs are well designed, more can be done to utilize the advantages of technology to make learning more efficient. In this project, we propose to use concept trees to model the knowledge domain, and adopt the Rasch model to assess a learner's ability in order to present targeted lessons and an ability spectrum specific to the learner. To demonstrate the feasibility of our approach, we developed an iOS application prototype using the subject of simple addition as a course for grade 1. The subject is broken down into specific concepts that can be tested and taught, which are stored in a concept tree. Each tree node corresponds to a set of items (i.e. test questions) as well as a lesson for a specific concept that follows a certain distribution according to its difficulty. To begin, a learner is first given an item for a concept in the middle of the distribution, and then based on the correctness of the answer, the learner is given either a harder or easier item accordingly. After a few items have been answered, the user's ability is ascertained and a series of lessons can be delivered targeted at the learner's current ability. The prototype is a thin client designed in the iOS environment that utilizes JSON remote procedure calls to an Ubuntu Amazon EC2 instance.