

Affordable Learning Georgia Affordable Materials Grants Continuous Improvement Grants Final Report

(or Mini-Grants, for R17 and earlier)

General Information

Date: 08/16/2021

Grant Round: R17

Grant Number: M127

Institution Name(s): Kennesaw State University

Team Members (Name, Title, Department, Institutions if different, and email address for each):

Project Lead: Selena He

Course Name(s) and Course Numbers: CS4322 – Mobile Application Development

Final Semester of Project: Summer 2021

If applicable to your project:

Average Number of Students Per Course Section:

Number of Course Sections Affected by Implementation of Revised Resources:

Total Number of Students Affected by Implementation of Revised Resources:

1. Project Narrative

Mobile software development (CS4322) has been integrated into Kennesaw State University's (KSU) BSCS curriculum for years. In the course, basic Android application development components are introduced. However, developers are increasingly relying on Machine Learning (ML) to enhance their app's user experience. Moreover, using smartphone camera as a visual device to interact with the real world has becoming ever popular with utilization of deep learning and augmented reality as a tool. Hence, it is a good time to modify the existing course contents and to integrate the latest Artificial Intelligence (AI) technologies, such as TensorFlow Lite (the Tensorflow implementation for smartphone devices), and Firebase ML kit (a Machine Learning SDK available on Google Firebase). On the other hand, to have more funny side of technology, we can start playing around with Augmented Reality (AR) with ARCore and Android Camera X.

In this mini-grant project, learning materials for data analytics, AI and AR tools for Android application development are introduced, and hand-on use cases and labs are designed and posted on CS4322 course website. In Summer 2020, I started to self-learn the materials online and

design and create appropriate hand-on labs for students. In Fall 2020, I posted all the learning materials online. The learning materials are shown in the powerpoint files on the “Topics” column. The hands-on labs and homework are posted on the “Lab Assignments” and “Homework” columns. In Spring 2021, we offered the course with the modified materials.

There is no prerequisite for this course when it is first proposed. Hence, some students registered the course has no prior knowledge of machine learning, artificial intelligence, and augmented reality. They met some problems to implement related assignments. We may need add prerequisites for this course or introduce some basic machine learning algorithms at the beginning of the semester.

2. Materials Description

The new materials are introduced gradually in the course. The slides are revised and posted on the “Topic” column. The two new designed assignments are shown in the following links:

http://ksuweb.kennesaw.edu/~she4/2021Spring/cs4322/Labs/Lab12_AR.pdf

http://ksuweb.kennesaw.edu/~she4/2021Spring/cs4322/HW/HW3_AI.pdf

3. Materials Links

I posted all the developed materials on the following website:

<http://ksuweb.kennesaw.edu/~she4/2021Spring/cs4322/lectures.php>

4. Future Plans

We plan to submit our experience to the Open Education Conference 2022.

We will keep use the revised materials for the course in the future. We are open to continuously improve the course materials in the future.