

CSE 535 Mobile Computing Project 2

(Fall 2022)

The idea of this project is to use the Android Application created in Assignment 1 to upload handwritten digit pictures to the server and use the server to classify the digits. The digits should be placed in their respective folders after the classification of the images.

Project 2 will be a team project. Everyone is expected to **submit a video** of the application working along with the **source code**.

Deliverables:

- 1) **Mobile Application:** The mobile application will be exactly similar to Assignment 1 except that there will not be any category dropdown list for this one.
- 2) **Server Side:** This time you will need to train a **basic deep-learning framework from scratch** on the MNIST dataset to classify different handwritten digits. Once you have trained the deep learning network on the dataset you will use the trained model to classify the images as they are uploaded from the application. The classified images will then need to be stored in their respective folder on the server. Please download the [dataset](#) to train your model. For grading purposes, we will be using randomly clicked images of handwritten digits. Your grades will be proportional to the accuracy of the model.

TASKS: 1. Modify the Mobile Application 2. Modify the server code to accept the picture without the image category 3. Decide on a ML Pipeline 4. Identify the dimensions of image 5. Identify the type of Deep Learning framework that needs to be used 6. Build the Deep Learning Model from scratch 7. Load the MNIST dataset 8. Split the dataset to train and validation 9. Preprocess the dataset 10. Train the model using the dataset 11. Validate the trained model 12. Check the weights of the Model and perform fine tuning if required 13. Store the trained model 14. Load the trained model for testing 15. Check the accuracy of the model 16. Modify server to call the test function 17. Integrate all the components of the server 18. Check if the whole application is integrated seamlessly 19. Provide some random handwritten digits and see the classification 20. Report the accuracy of the classification. 21. Check if the classified images are being stored in the respective folders 22. Write the working of the application in the report format and create a video of the working of the application 23. Put all the code and report in pdf format in a zip file 24. Submit the zipped file 25. Prepare the application for the seamless working demo

Submission:

- 1) Source Code of both Application and server.
- 2) Video of a working demonstration of the application and the server.
- 3) A 1-2 page report explaining the technical workings of your application.

All the above things need to be zipped together and uploaded on Canvas.

Important Dates for Project 1:

- 1) Due Date to Submit: 11/8/2022 at 11.59 pm (Arizona Time)

Notes:

We will be taking a **Zero Tolerance Policy toward Plagiarism**. So, please submit only your **original work**. Violations of the University's Academic Integrity policy will not be ignored.

Penalties include reduced or no credit for submitted work, a failing grade in the class, a note on your official transcript that shows you were punished for cheating, suspension, expulsion, and revocation of already awarded degrees. The university's academic integrity policy can be found at <https://provost.asu.edu/academic-integrity>.

Thank You