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ISAT B409

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Final Project Abstract

IDEA

In this project, we are developing a game app where the player competes against the computer. The game has two stages, each with 10 turns. In the first stage, the user will enter 10 numbers, and the computer will attempt to guess these numbers based on its machine learning training. In the second stage, the computer will display 10 numbers from the MNIST dataset, and the user will try to guess them. Finally, we will compare the results to determine who performed better in guessing the numbers.

TECHNICAL DETAILS

For the first stage, where the computer guesses the numbers, we will use Neural Networks for number recognition. Initially, the computer will be trained to recognize numbers from 0 to 9 to keep the game simple. Expanding this range could be considered in future iterations of the app, depending on available time.

We will train the model using the TensorFlow library with Python. The model architecture includes flattening the 28x28 pixel images, followed by dense layers with ReLU activation, and a dropout layer to prevent overfitting. The output layer will use softmax activation to classify the digits. The trained model will then be converted to TensorFlow Lite format for deployment on mobile devices. Java will be our primary coding language for mobile development. Essentially, we will train our model independently and then deploy it on the mobile device.

The training data will be sourced from the MNIST dataset. For user input in the first stage, we will use the FingerPaint library from the Maven Repository.

In the second stage, where the user guesses the numbers, the computer will display numbers randomly selected from the MNIST dataset. Each correct guess by the user will increase their score by one point. Finally, we compare the user's score with the computer's guesses to determine the winner.

Please note that these technical details are preliminary and may evolve as the project progresses.

DELIVERABLES

1. All-important coding files in a ZIP file
2. Comprehensive documentation for the project
3. Presentation materials for the project