The idea is to create an app that teaches people math using deep learning.

the app will show a math problem to the user then the user needs to draw the answer and by using deep learning we can recognize the drawn number and check if it’s the correct answer for the question.

Currently the app only uses addition problems I left the other arithmetic on purpose to let the student impalement it by himself.

Also all the numbers summation is below 10 so that user draw only a single digit. But we can challenge the student more by encouraging him to make the summation bigger than 10 and also by making the app recognize more than one digit

We use CNN (convolution neural network) as the brain of our app. CNN is a very famous and powerful Neural network that is used in many computer vision problems. You can read more about it [here](https://towardsdatascience.com/convolutional-neural-networks-explained-9cc5188c4939" \l ":~:text=A%20Convolutional%20Neural%20Network%2C%20also,topology%2C%20such%20as%20an%20image.&text=Each%20neuron%20works%20in%20its,cover%20the%20entire%20visual%20field.)

We have trained a CNN model to recognize handwritten digits from 0 to 9 by using the MNIST dataset which is very well-known. The model takes in a (48x48) grayscale image then outputs 10 probabilities one probability per number the maximum probability represents the correct number.

We used “Tensorflow“ and “Keras” in our training process. Keras comes with the MNIST dataset built-in so we can use it directly. Also tensorflow helps us design our model and save it after finishing training moreover it helps us load the saved model so that we don’t need to train it from scratch.