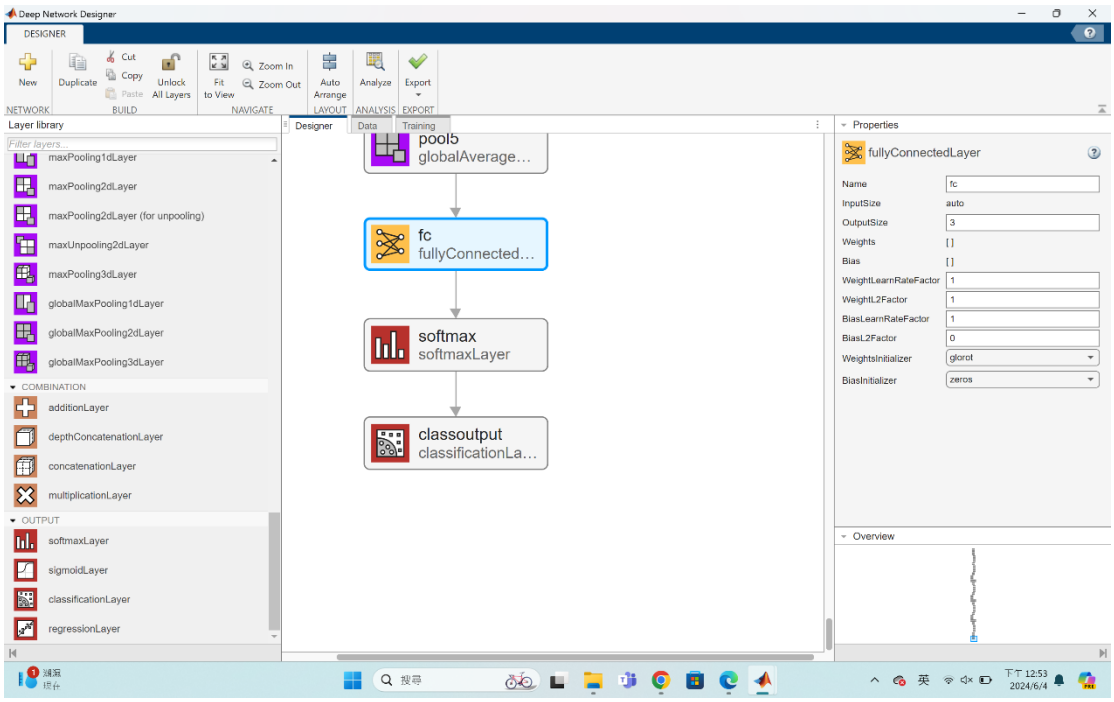
Matlab homework 13 李宇恩 Eileen D1271450



Firstly, is what is the three layers including fullyConnectedLayer, softmaxLayer, and classificationLayer, let start with fullyConnectedLayer, it's called this name because this layer's each neuron is connected the previous layer which is pool5's every neuron, letting the network to learn complex representations of the output data, resulting in the dense network of connections, it transforms the input data into a different space by computing a weighted sum of inputs, adding a bias, and applying an activation function, while the weights is associated to each connection, adjusting during the training process in order to minimize the error in predictions, and the bias is a term of each neuron, which allows the better fitting of the model in the training data. Next is the softmaxLayer, it is used to convert the raw output scores from the previous which is the fullyConnectedLayer into probabilities, letting interpreting the network's output as a probability distribution over several classes be easier, the probability distribution is where the sum of all probabilities is equal to one, by producing it, the layer allows for a clear decision on which class to choose with the highest probability, the transformation above involves exponentiating each score and then normalizing by the sum of all exponentiated scores. The classificationLayer is used in

conjunction with the softmaxLayer for classification tasks, usually follows it, and is responsible for computing training, evaluating the performance of the model's loss, this loss is then used to update the network's weights during training, it can also evaluate metrics such as accuracy, precision, recall, and F1-Score to access the model's performance.

Secondly, is each three layers' input and output, also starting with the fullyConnectedLayer, it's input feature's vector from the previous layer, pool5, while output being a new feature vector with a length specified by 'Outputsize' which defines this layer's number of output neurons. Then is the softmaxLayer, which input feature vector from the fullyConnectedLayer, and output is the predicted probabilities for each class represented by a probability vector. The input of classificationLayer is the probability vector from the SoftmaxLayer and the true class labels, and it's output is the loss value used for backpropagation to update the model weights.

Lastly, is why change the number of 'Outputsize' of fullyConnectedLayer, changing it to three means that the layer will have three neurons, each producing an output value.