Neural Network

Dataset

The dataset used in training the model is from UCI Machine Learning Repositories entitled Seeds (source: https://doi.org/10.24432/C5H30K). It is a classification dataset with three classes. The dataset consists 210 instances in each of the 7 features; namely "area", "perimeter", "compactness", "kernel_length", "kernel_width", "asymetry_coefficient", and "length_of_kernel_groove." Each feature has a numeric data with varying values therefore, it needs to be scaled first in order to be used in training the model. The target variable named "classification" has three values: 1, 2, and 3. These values were converted to categorical values in order to be used in the model.

Results

A Sequential model from keras library was created and trained using the processed dataset described above. It is composed of three Dense layers: the input layer has 7 nodes, one hidden layer with 14, and the output layer with 3 which serves as the categories for the classification of seeds. The model was compiled and fitted with 'adam' optimizer and categorical_crossentropy for the loss. The training has 20 epoch and batch size of 2. The model showed a good performance with around 93% accuracy and 20% loss on the 20th epoch. When the model was evaluated, it displays an accuracy of around 98% and a loss of 15%.

The image below shows a confusion matrix between the predicted class of the model and its actual class.