

## Project 2

Convolutional Neural Network (CNN) is used as image classifier in this task. The architecture of the CNN is summarized below:

Input Image (using Lanczos resampling to resize to 64 pixels x 64 pixels x 3 channels)

Convolution Layer 1 (32 filters with 3x3 in sides, stride = 1, using RELU as activation function)

Convolution Layer 2 (32 filters with 3x3 in sides, stride = 1, using RELU as activation function)

MaxPooling Layer 1 (2x2 insides, stride = 2)

(Dropout rate = 0.25, avoid overfitting)

Convolution Layer 3 (64 filters with 3x3 in sides, stride = 1, using RELU as activation function)

Convolution Layer 4 (64 filters with 3x3 in sides, stride = 1, using RELU as activation function)

MaxPooling Layer 2 (2x2 insides, stride = 2)

(Dropout rate = 0.25, avoid overfitting)

Fully connected layer (with 256 nodes and using RELU as activation function)

(Dropout rate = 0.5, avoid overfitting)

Output layer (using Softmax as activation function with 5 outputs)

The above parameters are chosen by heuristics and also by trial-and-error to come up the model architecture design.

During model training, the loss function is cross entropy, ADAM optimization algorithm is used.

20 epochs with batch size = 16 is used (determined by trial-and-error).

The validation accuracy is **0.6545**.