Description of the programming software used, including used features

Programming software: Tensorflow with Keras

Tensorflow is a popular python library for solving various machine learning problems, mainly training neural networks. Its API is not the most intuitive one, hence Keras was developed as an abstraction over Tensorflow in order to make programming neural networks faster and more intuitive. Nowadays it is included as a submodule in Tensorflow.

In terms of features, we will mainly use the neural network creation facilities such as using fully connected layers for artificial neural networks and convolutional layers for convolutional neural networks. We might use also other layers such as dropout or pooling. Another crucial component of Tensorflow is that it computes and manages both forward and backward propagation. This means that the gradient computations are done by the framework, thus it is fairly easy to perform supervised learning. Also, various tensor operations could be used.