Convolutional Neural Network (CNN) is a class of feed-forward neural networks with convolutional operations and deep structure, which is one of the representative algorithms for deep learning. Conventional neural networks generally adopt the fully connected approach, which can lead to problems such as huge number of parameters, long training time, high energy consumption, and even difficult to train. On the other hand, CNN realizes the local connection and weight sharing of neurons through convolutional operation, i.e., it is a kind of incompletely connected network, which greatly reduces the training difficulty of the network and improves the comprehensive performance of the model. Therefore, CNN algorithm is mainly used to realize the recognition and feature extraction of target image. Between the CNN input layer and the output layer, there are often multiple hidden layers, which mainly include convolutional layer, pooling layer, fully connected layer, normalization layer, etc. In addition, there may also be an anti-convolutional layer. In addition, in addition to the initialization of the model internal functions and solution methods, the initialization of the parameters is also required. In order to distinguish the weights, bias and other parameters after the model training is completed, the initialization setup parameters are called hyperparameters, which mainly include the learning rate, batch, number of iterations, weight decay, momentum and so on. Due to the differences in the methods involved in the identification of different rock features (weak interlayers, joints and fissures, groundwater, rock surface structure, etc.), the structure of the CNN model used for each type of rock feature will not be analyzed in detail.