



```
1 # CNN-LSTM Model
2 model = Sequential()
3 model.add(TimeDistributed(Conv1D(filters=64, kernel_size=3, activation='relu'), input_shape=(None, n_length, num_features)))
4 model.add(TimeDistributed(Conv1D(filters=64, kernel_size=3, activation='relu')))
5 model.add(TimeDistributed(Dropout(0.4)))
6 model.add(TimeDistributed(MaxPooling1D(1)))
7 model.add(TimeDistributed(Flatten()))
8 model.add(BatchNormalization())
9 model.add(LSTM(1024))
10 model.add(Dropout(0.4))
11 model.add(BatchNormalization())
12 model.add(Dense(1024, activation='relu'))
13 model.add(BatchNormalization())
14 model.add(Dense(number_labels, activation='softmax'))
15
16 optimizer = keras.optimizers.Adam(lr=0.0001)
17
18 model.compile(optimizer=optimizer, loss='categorical_crossentropy', metrics=['categorical_accuracy'])
19
20 print(model.summary())
```

Model: "sequential"