# mdCNN – Multi dimensional CNN

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The network can handle input data with 1 2 or 3 dimensions. Every input can have several feature maps.

Net specification:

**Input data format:**

**Input data to ‘Train’ is a struct with 4 elements. I,labels,I\_test,in the following format:**

* Training data is stored in array called ‘I’ , the labels are stored in a vector named ‘labels’. I and labels are at the same length.
* Testing data is stored in ‘I\_test’ array and ‘labels\_test’ vector.

Training process:

The network state is saved after each iteration loop. The net is saved to a file called ‘net.mat’. This file contains the full state of the network, including the Training state, so you can halt the training process anytime and then load the network from file using load(‘net.mat’)

Its possible to load the network file, and then continue the training process.

**Layer properties:**

**Padding/Stride/Pooling** – this property can have a scalar value or a vector value. When providing scalar this value will be used for all dimension i.e ‘stride’ ,3

When providing a vector a different value can be used per dimension. i.e ‘stride’ , [2 , 1, 5]

2 will be used in Y dimension, 1 in X and 5 in Z

**When no value is specified, default is used:**

Default for padding is 0 for all dimensions (no padding)

Default for stride is 1 for all dimensions (no stride)

Default for pooling is 1 for all dimensions (no pooling)

For pooling/stride there is no requirement that the previous layer out is a multiple of the given value. In case this happens input is expended with zeroes.

You can break a running training session by removing a remark in ‘emptyScript.m’ in the line %keyboard

After each iteration this file is parsed and the keyboard command pauses the run and you can add breakpoints and check env variables.

In order to continue the run type ‘return’ in command window.

All possible configuration settings can be found in ‘CreateNet.m’ in ‘initNetDefaults’ function and listed here below: