

In [1]:

```
%matplotlib inline
import warnings
from keras.models import Sequential
from keras.layers import Dense, Activation, Convolution2D, Flatten, Dropout, MaxPool2D
from keras.optimizers import SGD
import utils
import numpy as np
import matplotlib.pyplot as plt
import pandas as pd
from keras.utils.np_utils import to_categorical
from keras import backend as K
import sklearn as sk
```

Using TensorFlow backend.

In [8]:

```
num_classes = 10
train = np.genfromtxt('/Users/krishna/MIRI/MVA/Assignment2/opNN.csv', delimiter=',')
```

In [37]:

```
X = train[:, :9]
Y = train[:, 9]
Y = to_categorical(Y)
```

In [47]:

```
sgd = SGD(momentum=0.9, decay=1e-4)
model = Sequential()
model.add(Dense(output_dim=400, input_dim=9))
model.add(Activation('sigmoid'))
model.add(Dense(output_dim=10))
model.add(Activation('softmax'))
model.compile(loss='categorical_crossentropy', optimizer=sgd, metrics=['accuracy'])
```

In [48]:

```
model.fit(X,Y, nb_epoch=5, batch_size=120)
```

Epoch 1/5

365/365 [=====] - 0s - loss: 2.5211 - acc: 0.0877

Epoch 2/5

365/365 [=====] - 0s - loss: 2.1885 - acc: 0.2082

Epoch 3/5

365/365 [=====] - 0s - loss: 2.0899 - acc: 0.3425

Epoch 4/5

365/365 [=====] - 0s - loss: 1.7808 - acc: 0.3781

Epoch 5/5

365/365 [=====] - 0s - loss: 1.5576 - acc: 0.6411

Out[48]:

<keras.callbacks.History at 0x11814a910>

In [51]:

```
1 - .64
```

Out[51]:

0.36