

# Neural Net on Gpu

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# Problems

Cpu has few complex cores, optimised for serial computing.

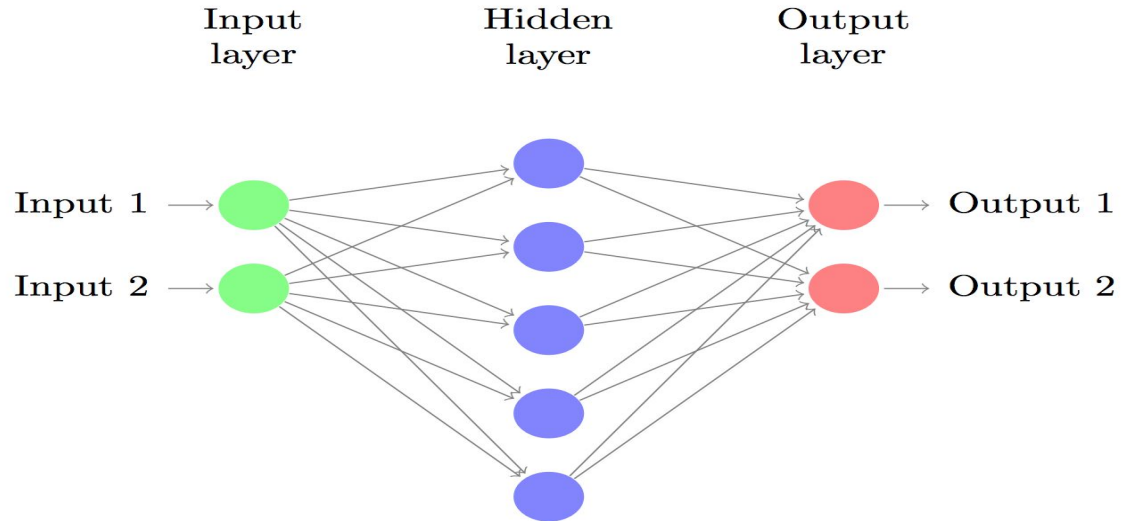
For highly complex data complex computation are difficult, time consuming.

Gpu 1000s of simple cores

massively parallel operations, square root of all values in a region of memory quickly

highly effective in Image processing ,NLP, speech recognition.

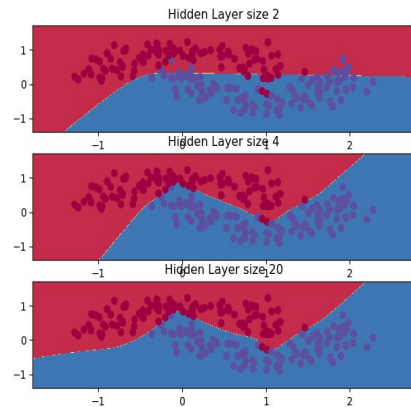
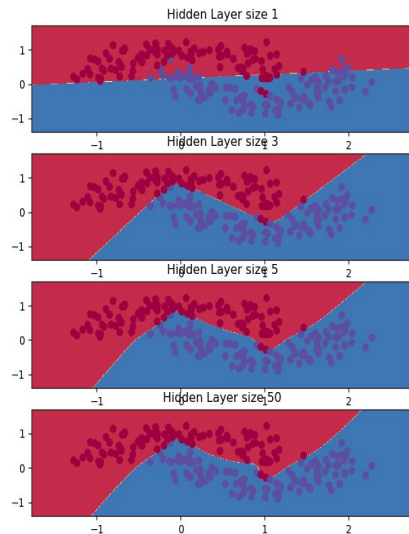
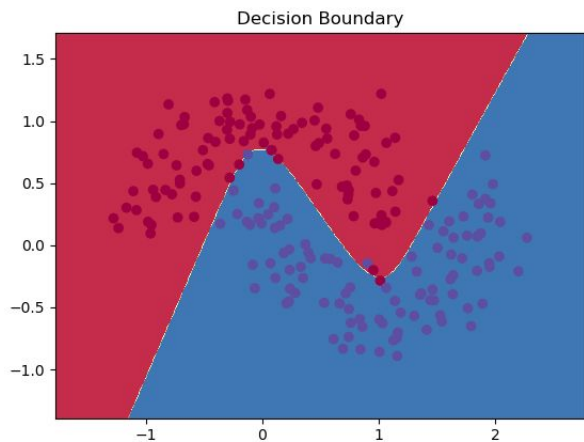
# Neural net



<https://www.doc.ic.ac.uk/~js4416/163/website/neural-networks/>

# On Cpu output clustering problem

200 sample points



# Theano

In neural net we have

Gradient function ,Matrix multiplication, Dot products

define, optimize, and evaluate mathematical expressions involving multi-dimensional arrays efficiently.

Computational graph

Symbolic variables - not predefined , pre-defined

# Functions theano

# Gradients

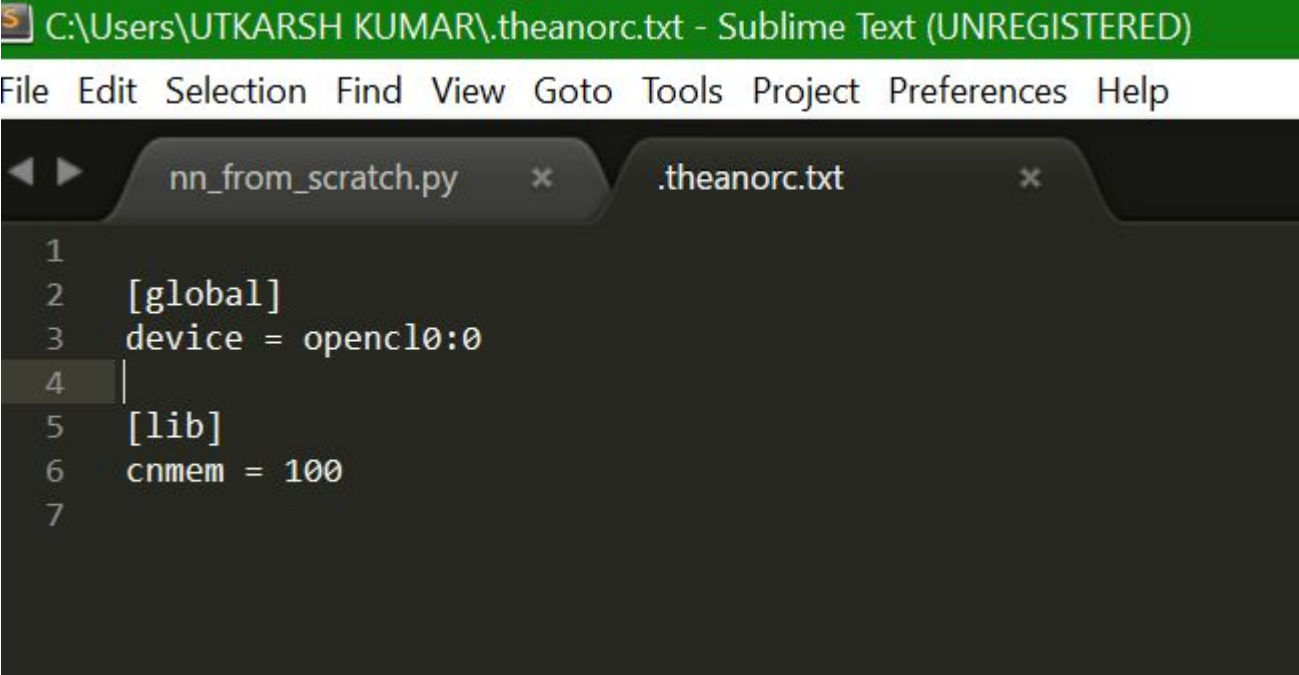
```
dW2 = T.grad(loss, W2)
```

```
db2 = T.grad(loss, b2)
```

```
W1 = theano.shared(np.random.randn(nn_input_dim, nn_hdim).astype('float32'),  
name='W1')
```

```
b1 = theano.shared(np.zeros(nn_hdim).astype('float32'), name='b1')
```

# Theano config file



The screenshot shows a Sublime Text editor window with the title bar "C:\Users\UTKARSH KUMAR\.theanorc.txt - Sublime Text (UNREGISTERED)". The menu bar includes "File", "Edit", "Selection", "Find", "View", "Goto", "Tools", "Project", "Preferences", and "Help". The editor has two tabs: "nn\_from\_scratch.py" and ".theanorc.txt". The ".theanorc.txt" tab is active, displaying the following configuration:

```
1  
2 [global]  
3 device = opengl0:0  
4  
5 [lib]  
6 cnmem = 100  
7
```