AI Chat Bot

Setup

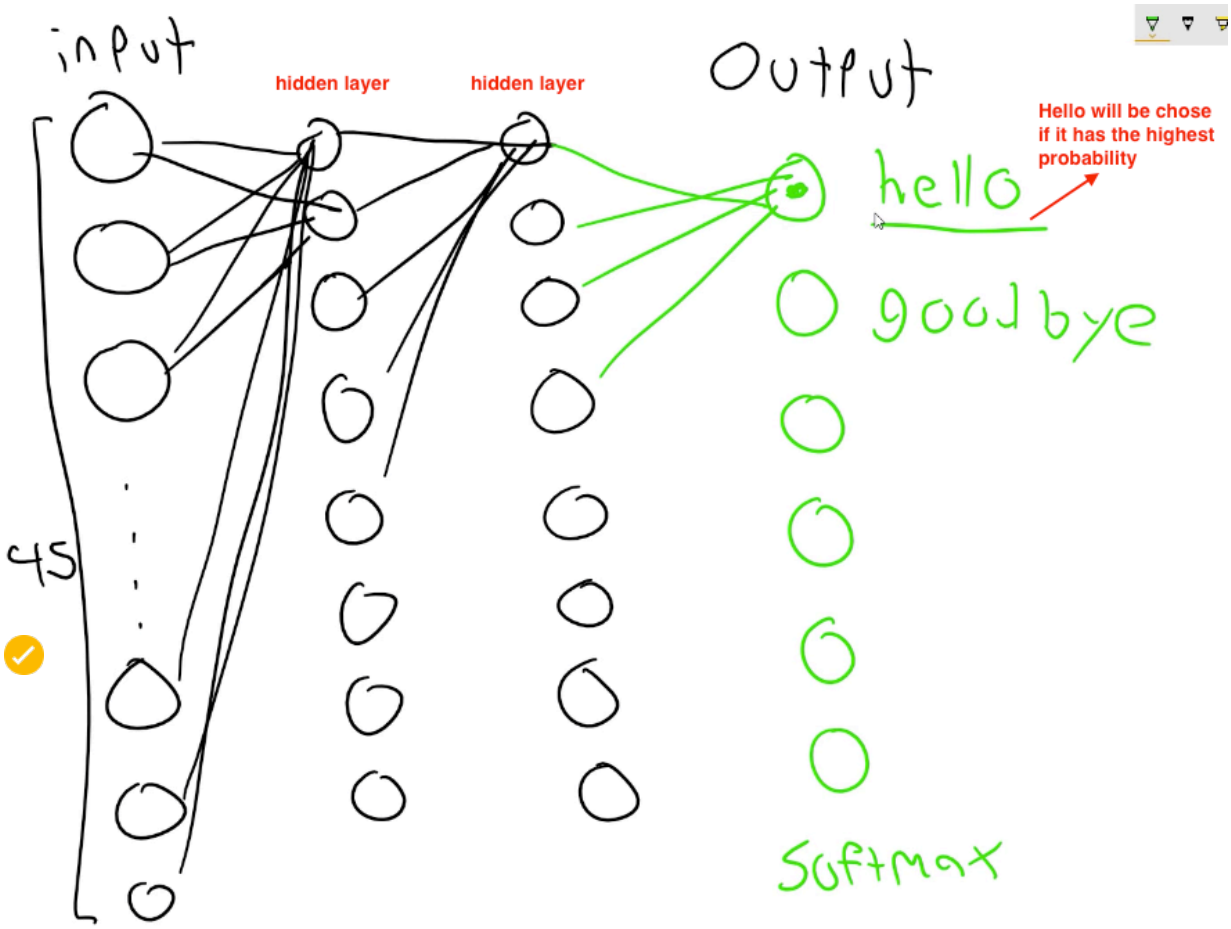
- Create virtual environment: chatbot_envir
- Install Natural Language Tool Kit: pip install nltk
  + This will working with our words and trimming them down
- Install numpy, tensorflow and tflearn:
  + pip install numpy
  + pip install tensorflow
  + pip install tflearn
- Download nltk to avoid error. In the environment:

```
(chatbot_envir) Haos-MacBook-Pro-2:~ lamtuhao$ python
Python 3.6.12 |Anaconda, Inc.| (default, Sep  8 2020, 17:50:39)
[GCC Clang 10.0.0 ] on darwin
Type "help", "copyright", "credits" or "license" for more information.
>>> import nltk
>>> nltk.download()
showing info https://raw.githubusercontent.com/nltk/nltk_data/gh-pages/index.xml
True
>>>
```

This will open the window where to download all necessary package
Ref link: https://www.nltk.org/data.html

Understand the concept

- The input layer will have 45 neuron representing 45 input words from text
- We will 2 hidden layers (8 neurons each) that will working on adjusting the weight and bias to spit out the probability of word in the output layer
- Output layer will have 6 neurons under softmax where it will take the highest probability neuron among others neuron as the correct prediction



Model

(Partial screen shot of the training)

```
Training Step: 3985  | total loss: 0.47310 | time: 0.001s
| Adam | epoch: 997 | loss: 0.47310 - acc: 0.9624 -- iter: 08/26
Training Step: 3986  | total loss: 0.43291 | time: 0.003s
| Adam | epoch: 997 | loss: 0.43291 - acc: 0.9662 -- iter: 16/26
Training Step: 3987  | total loss: 0.39676 | time: 0.004s
| Adam | epoch: 997 | loss: 0.39676 - acc: 0.9696 -- iter: 24/26
Training Step: 3988  | total loss: 0.36444 | time: 0.005s
| Adam | epoch: 997 | loss: 0.36444 - acc: 0.9726 -- iter: 26/26
--
Training Step: 3989  | total loss: 0.33515 | time: 0.001s
| Adam | epoch: 998 | loss: 0.33515 - acc: 0.9753 -- iter: 08/26
Training Step: 3990  | total loss: 0.30883 | time: 0.003s
| Adam | epoch: 998 | loss: 0.30883 - acc: 0.9778 -- iter: 16/26
Training Step: 3991  | total loss: 0.28514 | time: 0.004s
| Adam | epoch: 998 | loss: 0.28514 - acc: 0.9800 -- iter: 24/26
Training Step: 3992  | total loss: 0.26515 | time: 0.005s
| Adam | epoch: 998 | loss: 0.26515 - acc: 0.9820 -- iter: 26/26
--
Training Step: 3993  | total loss: 0.95010 | time: 0.001s
| Adam | epoch: 999 | loss: 0.95010 - acc: 0.8838 -- iter: 08/26
Training Step: 3994  | total loss: 0.86375 | time: 0.003s
| Adam | epoch: 999 | loss: 0.86375 - acc: 0.8954 -- iter: 16/26
Training Step: 3995  | total loss: 0.78601 | time: 0.004s
| Adam | epoch: 999 | loss: 0.78601 - acc: 0.9059 -- iter: 24/26
Training Step: 3996  | total loss: 0.71603 | time: 0.005s
| Adam | epoch: 999 | loss: 0.71603 - acc: 0.9153 -- iter: 26/26
--
Training Step: 3997  | total loss: 0.65282 | time: 0.001s
| Adam | epoch: 1000 | loss: 0.65282 - acc: 0.9238 -- iter: 08/26
Training Step: 3998  | total loss: 0.59384 | time: 0.003s
| Adam | epoch: 1000 | loss: 0.59384 - acc: 0.9314 -- iter: 16/26
Training Step: 3999  | total loss: 0.54154 | time: 0.004s
| Adam | epoch: 1000 | loss: 0.54154 - acc: 0.9383 -- iter: 24/26
Training Step: 4000  | total loss: 0.49615 | time: 0.006s
| Adam | epoch: 1000 | loss: 0.49615 - acc: 0.9444 -- iter: 26/26
--
```

We could see the accuracy is very high - 0.9444 since the input data from the json file is quite small. If we have more, the accuracy probably decrease

Result:

```
--
Please talk with the bot! Type 'quit' to end
You: Hello
Bot:  Good to see you again!
You: tell me about yourself
Bot:  I have a great passion for AI
You: what's your name?
Bot:  My name is Hao Lam.
You: what school you are in?
Bot:  I'm majoring Computer Science at CSUEB. I will graduate on Spring 2021
You: Do you have any projects?
Bot:  I have many projects, see my github:lamtuhao98
You:
```