











Resources: Basic Brain Concepts and Neural **Networks** 



# **TidBIT**

Do neural nets dream of AI fairy tales? The following bedtime story was written by an AI called Botnik, trained on the famed Brothers Grimm fairy tales: "Once upon a time, there was a golden horse with a golden saddle and a beautiful purple flower in its hair. The horse would carry the flower to the village where the princess danced for joy at the thought of looking so beautiful and good.

'It's magnificent!' she said to her father, the king of bread and cheese. 'Will you give it something to eat and drink if I finally marry the prince?'

You see, the king had long since urged his daughter to marry the only eligible prince in the land. The problem was she did not love him, and so she had continued to refuse his proposal."

While perhaps not completely traditional, there are aspects of this tale that conform to what we expect of a fairy tale. With more data and more training, you could imagine that Botnik could create even more sensible fairy tales. However, it's important to remember that a neural net is only as good as the data it's trained with. It's important to keep in mind that it's not just the quantity, but the quality of data that matters. And what happens when that data has inherent biases, such as the gender stereotypes common in fairy tales? How might those biases be further reinforced by the AI trained on that data, as we see in this example?

#### Reference

Team Calm. (2018, Apr 11). 'Lost' Grimm fairy tale is first AI bedtime story. Calm Blog. Retrieved from https://blog.calm.com/blog/lost-grimm-fairy-tale-is-first-ai-bedtime-story



## **Required Resources**

**Textbook:** Deep Learning with Keras (http://ezproxy.snhu.edu/login? url=https://ebookcentral.proquest.com/lib/snhu-ebooks/detail.action?docID=4850536), Chapter 1 (all) and Chapter 2 (pp. 59-70)

In Chapter 1 of this Shapiro Library textbook, you will be introduced to the basics of neural networks with a focus on perceptron, multilayer perceptron, and Keras as a model. This reading discusses problems for training the perceptron, and incorporating activation functions and back propagation as a solution. The required sections of Chapter 2 will introduce you to coding examples, architecture, and reporting. As you read, consider the following:

- What are some of the potential problems with the perceptron?
- What is a multilayer perceptron?
- What is an epoch?
- How do you modify hyperparameters in a neural network?

Reading: Overview of Neuron Structure and Function

(https://www.khanacademy.org/science/biology/human-biology/neuron-nervous-system/a/overview-of-neuron-structure-and-function)

This reading provides a very brief overview of the structure of a neuron in the human brain, as well as the structure of neural networks in the human brain. Understanding the basic structure of neurons and neural networks will give you a better understanding of how AI neural networks were designed to mimic structures and functions of the human brain. As you read, consider the following:

- What are the three basic functions of a neuron?
- Why are neural networks important?

**Reading:** Al Is Not Similar to Human Intelligence. Thinking So Could Be Dangerous **C** (https://www.forbes.com/sites/fernandezelizabeth/2019/11/30/ai-is-not-similar-to-human-intelligence-thinking-so-could-be-dangerous/#3fbd0b846c22)

This reading discusses some of the important differences between human and machine intelligence. It contains a brief overview of what a neural network is before expanding upon some key differences regarding how neural networks "learn". As you read, consider the following:

- How is the concept of a neural network related to the function of a human brain?
- What are the three key differences Watson sees between human and machine intelligence?
- Why is it important to understand that machines 'think' differently?



## **Additional Support (Optional)**

**Textbook:** *Deep Learning with Keras* (http://ezproxy.snhu.edu/login? url=https://ebookcentral.proquest.com/lib/snhu-ebooks/detail.action?docID=4850536), Chapter 2 (pp. 44-58)

This optional section of Chapter 2 guides you through installing Theano, TensorFlow, and Keras in different environments. Although the environment you will be working in throughout this course is set up for you, it is still helpful to understand the installation process.

**Reading:** A Beginner's Guide to Neural Networks and Deep Learning **C** (https://pathmind.com/wiki/neural-network)

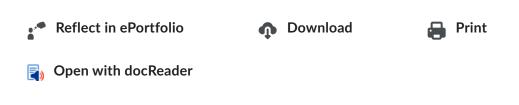
This ontional reading presents a very high-level view of neural networks as well as providing some

specific examples of how they can be used. This reading is considered optional because it reinforces many of the same concepts as the textbook readings, just presented in a different way. However, it may be helpful if you would like to see more examples of neural networks.

**Reading:** Jupyter Notebook in Apporto (Virtual Lab) Tutorial **C** (course\_documents/CS%20370%20Jupyter%20Notebook%20in%20Apporto%20Tutorial.pdf? \_&d2lSessionVal=2ceX7QdDv3ZiWHHnnB83B6gpb&ou=1347185)

This tutorial will help you navigate the technology you will be using in this course. You will learn how to get into the Jupyter Notebook via the Virtual Lab (Apporto), as well as how to complete, save, and download your work.

**Reading:** Virtual Lab Student Guide **(**/d2l/lor/viewer/viewFile.d2lfile/1347185/21762,-1/) Review this optional reading, which is also located in the Virtual Lab Access module, to understand how the Virtual Lab (Apporto) for this course works. This reading contains instructions on how to access the virtual lab, how to launch the course app, and how to upload files to and download files from Apporto.





#### You have viewed this topic



Explore these resources, which will help you learn how to compare human and machine intelligence and apply concepts of neural networks to solve programming problems.

Last Visited Jul 23, 2023 1:57 AM