

## SCIE300 Reading Assignment 4 (RA4)

70 points

### Question 1 (15 points)

Give definitions in your own words of the following three concepts introduced by Tegmark: Life 1.0, Life 2.0, Life 3.0.

### Question 2 (5 points)

Define the following concepts as used by Tegmark in his book (you may use direct quotations from the book): intelligence, superintelligence, artificial intelligence, AGI.

### Question 3 (15 points)

Consider the myths listed in figure 1.5. Choose one myth that you feel is most often believed by your own friends, family, or colleagues. State your choice and explain why it is believable, despite being a myth. Then briefly summarize Tegmark's rebuttal of the myth you have chosen.

### Question 4 (10 points)

Consider the right-hand panel of figure 2.3, which contains 4 balls and can store 4 bits of information, or equivalently, 16 possible values. Suppose there were instead 6 balls. How many bits and how many possible values could be stored?

### Question 5 (10 points)

Which stores more information, a human genome or a human brain? Give details from the text to justify your answer.

### Question 6 (10 points)

Briefly describe, in your own words, the meaning of *artificial neural network*. Compare and contrast with a biological neural network such as the brain of a mammal.

### Question 7 (5 points)

What is the meaning of the word "deep" in the phrase "deep learning"?