School of Computing and Information Systems
The University of Melbourne
COMP30027 MACHINE LEARNING (Semester 1, 2019)

Tutorial exercises: Week 10

1. A single–layer neural network is often referred to as a **perceptron**.

   (a) Why is a perceptron (which uses a **sigmoid** activation function) equivalent to **logistic regression**?

   (b) What makes a (feed–forward) neural network more interesting?

2. Why is a neural network suitable for **deep learning**? What is significant about the representation that we attempt to learn?

3. In the context of `word embeddings`, why do we need **negative sampling**?

4. Describe the mathematical formula of a multilayer perceptron with 1 hidden layer. Assume the input size is 1000, the hidden layer size is 100, and the output size is 20. Identify the parameters of the model, and their size.