COMP9444 Neural Networks and Deep Learning
Term 3, 2019

Exercises 5: Language Processing

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1. Consider the sentence

   "two flowers grew tall on two tall towers"

   a. Write the co–occurrence matrix X for this sentence, using a 4–word context window (i.e. two context words on either side of the central word)
   b. Try to find a software package (e.g. Octave, Matlab) with a built–in command for computing the singular value decomposition. Use it to compute the singular value decompositon of this matrix $X = USV^T$
   c. Extract a word representation from the first two columns of U and plot the words on a 2–dimensional graph.

Make sure you try answering the Exercises yourself, before checking the Sample Solutions