

COMP9444 Neural Networks and Deep Learning

Session 2, 2018

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 decomposition 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.
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Make sure you try answering the Exercises yourself, before checking the [Sample Solutions](#)