

# COMP9444 Neural Networks and Deep Learning

## Term 3, 2020

### Exercises 6: Word Vectors

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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. Use `torch.svd()` 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 use `matplotlib` to plot the words on a 2-dimensional graph.
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Make sure you attempt the questions yourself, before looking at the [Sample Solutions](#).