

Neural Networks and Deep Learning with Business Applications

SP Jain School of Global Management

Assignment L5

Exploring Word2Vec Models

Given the sentence "The quick brown fox" and the following pre-trained word embeddings, complete the following tasks involving the skip-gram and CBOW models of Word2Vec.

Word Embeddings (2-dimensional vectors):

- The: $[0.1, 0.3]$
- quick: $[0.5, 0.2]$
- brown: $[0.4, 0.9]$
- fox: $[0.7, 0.6]$

Questions for Submission:

- For the Skip-gram Model: What is the conditional probability of the word "quick" given the target word "brown"? (window size is 1)
- For the CBOW Model: Compute the conditional probability distribution for the target word "brown" given the context words "quick" and "fox". (window size is 2)