

### **1. What are the benefits of distributional semantics?**

A computational linguistics approach called distributional semantics makes use of the idea that meanings of linguistic items with similar distributions are similar. Because it enables the quantitative analysis of meaning based on the contexts in which words appear, this approach is very effective in large-scale linguistic analysis. Distributional semantics models are particularly useful in natural language processing (NLP) because they can compute semantic similarity by utilizing large amounts of textual data.

The broad applicability of distributional semantics across domains is one of its main advantages. These models perform exceptionally well in tasks such as context analysis, synonym detection, and even subtle language variation understanding.

### **2. What kind of problems might there be?**

Polysemy, in which a single word has multiple meanings, presents a significant challenge in the field of distributional semantics. Instead of treating polysemous words as distinct meanings, models processing them frequently produce representations that combine all of these meanings together.

Another inherent issue in distributional semantics is symbol grounding. This is the challenge of connecting abstract word representations to real-world concepts. Even if a model correctly identifies two words as similar based on their usage in text, it does not understand the essence of these words.

### **3. What kind of applications can you come up with using these models**

These applications are taken from the lecture slides

- Document clustering / classification
- Finding similar documents
- Finding similar words
- Word disambiguation
- Information retrieval
- Term discrimination
- Sentiment analysis
- Named entity recognition