

11 Natural Language Processing (ES)

Compositional semantics is concerned with modelling the meaning of phrases and sentences. It relies on the principle of compositionality, which states that the meaning of a phrase or a sentence can be derived from the meanings of its parts, guided by syntactic structure.

(a) What do the following examples demonstrate about the difficulties that compositional semantic models face?

(i) *it snows*

(ii) *rock the boat*

(iii) *enjoy a cigarette*
enjoy a book

(iv) *inject life*
inject hydrogen

[2 marks each]

(b) Distributional representations of phrases and sentences can be derived by combining, or *composing*, the distributional representations of individual words in them. Briefly describe:

(i) three limitations of vector mixture models;

(ii) how lexical function models address these limitations.

[3 marks each]

(c) Describe how adjectives can be represented as lexical functions and how such lexical functions can be learned from a text corpus. [6 marks]