Syllable based noun recognition for grounded videos

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Abstract—We aim to make the computers learn a new language without any previous knowledge about the language. In this work, we have used a semantic syllabic approach to acquire basic linguistic units particularly, noun based on the Langacker [**?**] theory of learning language. Based on a 2D video and co-occurring raw text, we demonstrate how this cognitively inspired model segments the world to obtain a meaning space, and combines words into hierarchical patterns for a linguistic pattern space. We try to recognize nouns in the English language and the Hindi language based on some narrations taken from different subjects using different association measures such as the mutual information, relative frequency, conditional probability and dominance weighted joint probability.

1 Introduction

1.1 Language learning framework

The problem of language acquisition has been of great interest to many disciplines including Linguistics, Psychology, Philosophy, Neurobiology, Cognitive science and Computer Science. From Panini [] to Chomsky [] to Tomasello, there have been many attempts to formalize the theory of language. The debate is mostly two-sided. Chomsky [] argues for the innateness of language based on the argument (known as ”poverty of stimulus”) that the child acquiring language has access to only positive examples (grammatical sentences), and very little corrective feedback. Thus, the Chomskyan framework focuses on the syntax of a language and is largely sceptical about semantics. So, learning a language from his viewpoint is learning a ”generative syntax” for that language. Langacker [], alternatively has given a central role to semantics in his language learning model. Langacker [] considers grammar as conceptualization and formalizes it as a bipolar symbolic unit interconnecting the phonological pole (linguistic representation) and the semantic pole (conceptual representation). In the view of cognitive grammar, language is entrenched in the usage and linguistic representations get their meanings because of their usage with some conceptual entity. The idea is analogous to a childs way of learning. When a child is born, he knows nothing about a language. He doesnt know anything about the noun, verb, preposition or the syntax or the word boundaries. But as he continuously hears description, slowly after many instances of a particular object or an action been referred to by a particular word, the child begins to recognize the word and associate it with the object or action.

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2 Conclusion

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References

[1] H. Kopka and P. W. Daly, *A Guide to LaTeX*, 3rd ed. Harlow, England: Addison-Wesley, 1999.