

Modelling Predictions at the Sentence-level

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Abstract:

The main goal of this project is to model the computational difference between predictions at the word-level and predictions at the sentence-level. Following the emergence of predictive architectures in cognitive sciences [1], language scientists became more interested by the relationship between anticipation (or prediction) and language processing [2]. Although many studies about prediction and language have been conducted [3], the exact role of predictive behaviour is still debated within the field [4]. As of now, most studies are focussing on predictions at the word-level and very few have considered predictions above word-level and it would be a great improvement to be able to model such predictions.

In this poster, focussing solely on cases where the task is to predict the last word of a truncated sentence, I present the computational differences between these two levels of predictions and I explain the intricacies of representing the interactions between bottom-up and top-down influences with respect to compositionality issues. Rabovsky et al. [5] presented a computationally explicit account of the prediction process at the word-level using an emerging representation they called a Sentence-Gestalt (SG), but their model does not really provide information about determining which element would be important to take into account when trying to model this level of prediction. I argue that SGs are not really sentence-like representation and thus we could not directly use them to model the sentence-level prediction. Finally, I present a new predictive model that integrates an explicit sentence-like representation, I compare it with Rabovsky et al.'s connectionist inspired model [5], and I show that predictions involving sentence-level representation lead to different derivations from the ones involving only word-level representations. This study is a first step in developing predictive models that could be able to take into account higher hierarchical cognitive level explicitly.

References

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