

D'Ulizia Arianna; Ferri Fernando; Grifoni Patrizia, **A Learning Algorithm for Multimodal Grammar Inference**, IEEE transactions on systems, man and cybernetics. Part B. Cybernetics. Institute of Electrical and Electronics Engineers, - New York, NY. USA. 2011

Abstract: The high costs of development and maintenance of multimodal grammars in integrating and understanding input in multimodal interfaces lead to the investigation of novel algorithmic solutions in automating grammar generation and in updating processes. Many algorithms for context-free grammar inference have been developed in the natural language processing literature. An extension of these algorithms toward the inference of multimodal grammars is necessary for multimodal input processing. In this paper, we propose a novel grammar inference mechanism that allows us to learn a multimodal grammar from its positive samples of multimodal sentences.

The algorithm first generates the multimodal grammar that is able to parse the positive samples of sentences and, afterward, makes use of two learning operators and the minimum description length metrics in improving the grammar description and in avoiding the over-generalization problem. The experimental results highlight the acceptable performances of the algorithm proposed in this paper since it has a very high probability of parsing valid sentences.