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Visual Representation of Semantic Network of Bulgarian Nominal Inflectional Morphology

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Abstract. In this work[1] we offer a space representation of a model of Bulgarian nominal inflectional morphology for the feature of definiteness using orthogonal semantic networks. A geometrical interpretation of the encoded network is based on a visual representation of orthogonal semantic relationship.

Keywords: grammar knowledge representation, orthogonal semantic networks

1 Introduction

The standard Bulgarian language does not use cases for syntactic representation but it has very rich inflectional system - both for derivational and for inflectional morphology [3]. The interpretation of the definite article given in [5, 6] uses the DATR language for lexical knowledge presentation [2] and presents the encoding of orthogonal semantic network using a linguistic motivation. The encoding is based on the analysis of grammar and semantic properties of nouns. The morphemes are defined to be of semantic value and the application uses some ideas applied in [1]. The architecture of the application includes: (i) all definite inflecting morphemes, (ii) 12 inflecting plural morphemes, (iii) inflectional grammar rules, (iv) lexical database, and (v) queries – all possible inflected forms. It uses inheritance networks and defines the words inflectional types with respect to the features of gender and number. The feature of gender is accepted as a specific trigger, and with respect to it, nouns are divided into: of masculine, of feminine, and of neuter gender. Within groups, there are different types of nouns depending on their suffix for forming plural. The inflectional type hierarchy and the detailed DATR encoding of all nominal inflection types is given in [5]. It is accepted as a base on which our visual representation was designed.

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2 The geometrical interpretation of DATR encoding

Our model represents grammar knowledge using orthogonal semantic networks which allows us to offer a geometrical interpretation. Normally, the visualization of semantic networks techniques is based on the conversion of orthogonal relation which is interpreted as a semantic relationship [4].

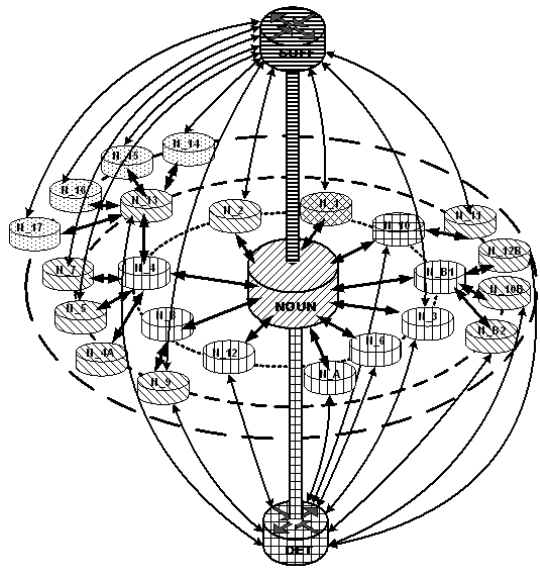

Fig. 1. The space representation of noun inflectional type hierarchy.

We use such idea, and in our space representation, the geometric coordinates of inflectional nodes underlie the semantic representation of the encoding. Thus, our space model interprets inheritance relationship as a semantic (using three concentric circles in a plane) to present the three types of inflectional nodes (see Fig. 1.). The presentation can be interpreted with respect to all semantic relationships between nodes (including inflection, inheritance, gender or number).

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