CHAPTER-6 Conclusion

This conclusion is a summary of previous chapters, and the overview of the outcome of the current work is presented. I will briefly speculate on the possible extension of the current work and related applications. Argument Structure is not only one of the most crucial and learnable aspects of verbs but is also the most significant component of grammar that forms an interface between syntax and semantics. The importance of the functional aspect of argument structure of verbs in any language makes it the most important and favorite choice of researchers in the field of semantics and syntax. Of late, studies on the argument structure of verbs and its lexical representation has received a great deal of attention from various scholars, since a knowledge of the argument structure and the thematic roles assigned by the verb to its arguments solely contributes to the understanding of sentences by way of verb sense disambiguation.

The focus of the present work is on the Argument Structure of verbs and thematic roles assigned by the verb to its arguments and the way in which the relational semantics of the verb is represented at the syntactic level. Knowledge of the argument structure captures fundamental participant/event relation, which is crucial in parsing and generation (Srinivas and Joshi 1999). This dissertation proposes to use Argument Structure for the verb sense disambiguation. This proposal illustrates by a practical implementation of the argument structure to show how it is aptly relevant and it is very crucial in the disambiguation of different uses of the same verb form involving a number of senses.
This work is an outcome of various efforts in understanding the theoretical concepts underlying the argument structure, understanding the argument structure of Telugu verbs and mainly the representation of the argument structure and the computational implementation and testing.

This work is an attempt to study the argument structure of Telugu verbs and is an effort to present a usable knowledge for computer applications involving problems like verb sense disambiguation in Telugu. This thesis does not claim to be a contribution to the theory of argument structure, directly or indirectly. But it can claim to be a practical exercise in demonstration of the relevance and significance of the importance of argument structure in the area of word sense disambiguation and the necessity of the incorporation of this knowledge in the development of various applications and tools in natural language processing (NLP). It is difficult to imagine the development of NLP applications without the involvement of argument structure. In this thesis we make a preliminary effort to bring forth the available knowledge and bringing together other relevant information with regard to Telugu to build a usable system for verb sense disambiguation. This thesis is probably, as far as our knowledge goes, is first of its kind for any Indian language to make use of such knowledge in a systematic way to create and demonstrate the practical use of this in the area of natural language processing- an important but latent sub-discipline in Linguistics involving practical implementation and testing of linguistic knowledge.
However, all the ambiguous verbs in Telugu that have different senses were not studied in this present work. It will be of course easy and effortless to resolve verb sense disambiguity if the thematic properties reflected in the alternations of argument structure correspond to the features of individual verb senses predictable. The major limitation of this work is that nouns in Telugu must be exhaustively analysed and marked for their semantic features. Verb sense disambiguation is certainly a very useful work in the area of Natural Language Processing. Using argument structure information of the verb for verb sense disambiguation is the first of its kind for Indian language applications, which will deliver greater gains in the long run, particularly in the area of Natural Language Processing.

This study has actually grown from the ambiguity resolution problems that have remained challenging task in Telugu-Hindi anusaaraka machine translation efforts. In the machine translation, of all the lexical categories, verbs have been the most frequently appearing ambiguous items. Even among these verbs, the frequently used verbs are the most ambiguous and the most ambiguous verbs are the most frequently used verbs. Therefore, it was considered that the resolution of the ambiguity of these verbs would greatly enhance the quality of the output.

The thesis mainly focused on two aspects, viz. understanding the nature and the structure of argument structure representation of verbs in Telugu and the actual implementation and testing. The first aspect mentioned, required the necessary ground work in the theory of
argument structure as applied to Telugu. It required the analysis of Telugu verbs from the point of valency and argument structure frames, culminating into the development of lexical entries for verbs with arguments and their semantic feature properties and the thematic roles. This exercise evidently establishes different argument structure frames for every distinct sense in case of ambiguous verbs. Two points emerge from this: (i). The need for the semantic lexicon i.e. lexical items, particularly nouns, must be represented in the lexicon besides their conventional phonological form with a set of semantic features which enable the recognition and the assignment of thematic roles by the verb; (ii) Transitive, Intransitive and Causative marking of verbs in the lexicon is a poor representation that cannot really be used as a substitute for argument structure frame. Any meaningful use of verbs in NLP applications should use the argument structure. The second aspect that the thesis focuses is on the actual implementation and testing. Based on the theoretical assumptions discussed in the previous chapters, and using the resources that exist at CALTS, the necessary data bases are created for use in the implementation. The algorithm, a calculational procedure is devised, which actually draws input, and uses different sorts of information such as verbs argument structure frames and the semantic lexicon besides calling on the Telugu morphological analyzer for the lexical analysis of the word forms in the test sentences. The program, that is based on this algorithm, is implemented and tested on fifty verbs which are ambiguous and the argument structure frames on average running into three per verb were used as the database for running or evaluating the resolution of the verb sense's ambiguity. The resolution of the ambiguity of sentences proved to be valid and effective. The same
thing can be extended to all verbs which are ambiguous in order to have a greater coverage and fidelity for practical use.