Paper Title:
Bangla Grammar Pattern Recognition Using Shift Reduce Parser

Paper Link:
https://ieeexplore.ieee.org/abstract/document/7760001

1 Summary

1.1 Motivation

The paper is motivated by the need for natural language processing capabilities for Bangla. Although difficult, parsing Bangla grammar is necessary for applications like machine translation. The author's aim was to develop a parser using a shift-reduce technique to recognize Bangla grammar patterns.

1.2 Contribution

The main contributions are the shift-reduce parser itself designed specifically for Bangla, the context-free grammar rules defined for Bangla, and a method to handle inflected word forms by reducing them to root forms before parsing. Understanding these important contributions sheds light on the advances into the paper's innovations.

1.3 Methodology

The methodology involves initially defining a context-free grammar for Bangla based on linguistic analysis. Next, the FIRST and FOLLOW two sets are generated. Using these, the LR(0) item sets are constructed and finally the parse table is built. The inflection handling reduces words to root forms so they can be recognized and parsed accurately. The attention on the rigorous process provides understanding of how the parser was developed.

1.4 Conclusion

The parser can effectively parse varied Bangla sentence types including simple, complex, and compound sentences. It handles conventional and unconventional word orders.

2 Limitations

2.1 First Limitation

The grammar is predefined, thus it might not cover all possible Bangla grammar constructs and suggests expanding the rules to improve coverage. Identifying this limitation provides important insight into potential improvements in the future.

2.2 Second Limitation

The parser does not address ambiguity, which is another important challenge for natural language parsing. Techniques for disambiguation must be included.

3 Synthesis

The shift-reduce parser provides a basis for enabling Bangla grammar recognition. With an expanded grammar and disambiguation capabilities, it can be integrated into downstream NLP systems like machine translation. The inflection handling technique also informs morphological analysis research for Bangla.