Project Title : Semantic Parser for Kannada

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MOTIVATION

- Kannada does not yet have Semantic checking methods for a given Kannada sentence.
- When Computational Linguistic is concerned, Kannada is lagging far behind compared to Telugu and Sanskrit.
- Writing the Semantic level Parser for any south Indian language is bit difficult.
- Because the languages are highly inflected with three gender forms.
- In most of the Indian languages including Kannada a verb ends with a token which indicates the gender of the person (Noun/ Pronoun).

INTRODUCTION

- Semantics, as a branch of linguistics, aims to study the meaning in language.

  Ex: hannu raamanannu tinditu
- This sentence follows the Syntactical rule, but semantically the sentence is meaningless.
- This project aims at doing the semantic parsing at Kaaraka level.
- It will find out which noun is playing the role of which Kaaraka in a given sentence.
- **Vibhatkis** are the suffixes that are usually a group that comes at end of word.

#	ವಿಭಕ್ತಿ	ಅರ್ಥ (ಕಾರಾಕಾರ್ಥ)	ಹೊಸಗನ್ನಡ ಪ್ರತ್ಯಯ
೧	ಪ್ರಥಮಾ	ಕರ್ತೃರ್ಥ/ಮಾಡುಗ(ಕೆಲಸ ಮಾಡುವ ನಾಮಪದ) – NOMINATIVE	ಉ
೨	ದ್ವಿತೀಯಾ	ಕರ್ಮಾರ್ಥ/ಕೆಲಸವು ಈ ನಾಮಪದದ ಮೇಲೆ ನಡೆಯುವುದು – ACCUSATIVE	ಅನ್ನು
೩	ತೃತಿಯಾ	ಕರಣಾರ್ಥ (ಸಾಧನಾರ್ಥ)/ಕೆಲಸಕ್ಕೆ ಕಾರಣ/ಇದನ್ನು ಬಳಸಿ ಬೇರೊಂದು ನಾಮಪದ ಕೆಲಸ ನಡೆಸುವುದು - ABLATIVE	ಇಂದ
೪	ಚತುರ್ಥೀ	ಸಂಪ್ರದಾನ (ಕೊಡುವಿಕೆ)/ತಲುಪುವ ಜಾಗ - DATIVE	ಗೆ, ಇಗೆ, ಕ್ಕೆ, ಅಕ್ಕೆ
೫	ಪಂಚಮೀ	ಅಪಾದಾನ (ಅಗಲಿಕೆ)/ಪ್ರೇರಣೆ	ದೆಸೆಯಿಂದ
೬	ಷಷ್ಠೀ	ಸಂಬಂಧ/ನಂಟು/ಬಿಸುಗೆ - GENATIVE	ಅ
೭	ಸಪ್ತಮೀ	ಅಧಿಕರಣ/ಜಾಗ - LOCATIVE	ಅಲ್ಲಿ, ಒಳು, ಆಗೆ

- Kaaraka is the name given to a relation between noun and a verb.
- There are 6 kaarakas mentioned by Paanini, namely:
  - > Kartaa (Doer)
  - > Karma (Experiencer)
  - > KaraNa (Instrument)
  - > Sampradaana (Recipient)
  - > Apaadaana (Separation)
  - > AdhikaraNa(location)
  - > Destination

GOALS

The non-technical goals to be achieved by this project are:

- Given a Kannada sentence with the Morphological tags, the program should identify the Kaaraka by doing the semantic level mapping.
- To determine the Kaarakas from the given sentence depending on the set of rules associated with the mappings.
- To handle the ambiguities based on two methods:
  > Aakanksha (Expectation) of the Verb.
  > Yogyatha (Eligibility) of the Noun.

TECHNICAL GOALS

- Find the Aakansha of each verb in a sentence and assign the associated Kaaraka expected for that verb.
- Classify the Kaarakas based on the Expectation of the Verbs
- Assign the score to each Naamapada in the Sentence based on the rules.
- Represent the Kaarakas in GUI form by having the verb in a sentence at the center and related Kaaraka for the Namapada in sentence around the verb.

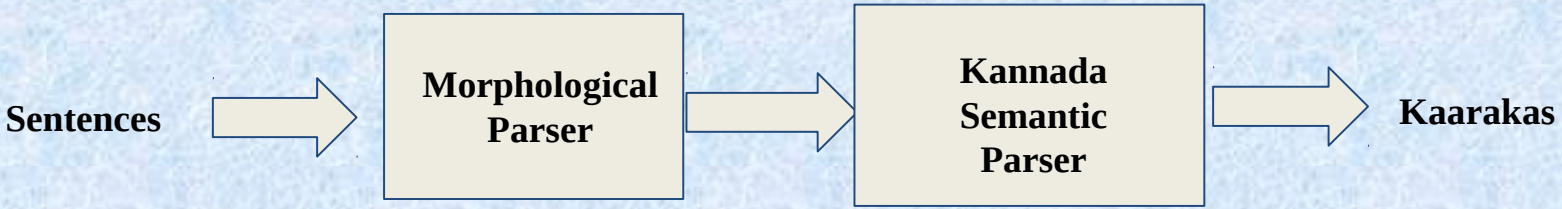
- raamanu manege hoodanu
- raamanu||raama||N-PRP-PER-M.SL-NOM manege||mane||N-COM-COU-N.SL-DAT hoodanu||hoogu||V-IN-ABS-PAST-P3.M.SL.

• N – Noun	V – Verb	N - Noun
• PRP – Proper	IN – Intransitive	COM - Common
• PER – Person	ABS – Absolute	COU – Countable
• M – Male	PAST – Past Tense	N - Neutral
• SL – Singular	P3 – 3rd Person	SL – Singular
• NOM – Nominative	M – Male	DAT - Dative

WHAT DOES THE PROJECT DO?

- Project **“Semantic Parser for Kannada”** is intended to perform the following tasks:
- A Program accepts a text file which consists of Kannada Sentences with the Morphological tags.
- The tag set is really important for each word in the Sentence which is Output from Morphological Parser.
- These tags are processed to find out the kaarakas.

SYSTEM DESIGN



DEMO

CONCLUSION

- This project can be further used to
  - > translate from one Indian language to another (Kannada to Telugu, for example).
  - > help in learning kannada language.
- Therefore our project does the semantics at kaaraka level and gives the Kaaraka for each sentence based on:
  - > Expectation of the Verbs (Aakanksha).
  - > Eligibility of the Nouns (Yogyatha).

Thank You