International Journal of Soft Computing 12 (4): 236-239, 2017
ISSN: 1816-9503

Construction of Relational Semantic Network for the Precision of PNL

Jana Shafi, Amtul Waheed and Rameezunnisa
Department of Computer Science, Prince Sattam Bin Abdul Aziz University,
Al-Kharj, Saudi Arabia

Abstract: Natural language processing gave wings to many languages such as LISP, High order logic, etc. which aims to become a precisable language. Nlp further refined with the concept of PNL and amplfied with GCL and its modalities in the most optimal form to be accepted by machine thus reducing the imprecision of propositions of machines to reject it. In this study, we discuss the shortcomings of GCL and know how to construct a precise semantic network.

Key words: Network, relation, PNL, GCL, semantic

INTRODUCTION

Natural language processing now reaches a certain level of computation with the ability to deliver precise content yet with limitations. The problem starts with imprecise nature of language which is a question mark to achieve our goal. In order to accomplish, natural language is computed or analyze closely and define in terms of perceptions. Natural language deploys with semantic web in order to get precise and accurate retrievals. The vision is to access the web in a natural language and fetch accurate results which are consistently striving (Rustin, 1973).

Perceptions definition is not limited it can be anything from imprecise natural language example truth, false, ugly, etc., PNL abandons bivalence. Perceptions Perception base system is developed to describe perceptions as a semantic entity (Zadeh, 2001).

PNL is named in order to get a precise natural language which abandons bivalence extended with GCL in which elements are a combination of generalizing constraints. Generalize constraints classified as hard and soft constraints to compute further (Gerla, 2000; Zadeh, 2000).

Even GCL also face limitations and complexity to simplify it semantic networks introduced. As we discuss above today, we need semantic web which understands commands as simple as natural language and retrieves accurate results in a meaningful way (Zadeh, 1997).

Semantic Web infrastructure can be restructured by appending different logical languages as well metadata schemes, fact databases in order to precise the content (Woods, 1978).

Literatur review: Once upon a time computer system are considered full fledge and complete. Scientist interestingly thought of NLP (Rustin, 1973; Locke and Booth,1955).

NLP comes into consideration when we expected outputs and inputs of our well developed computer systems in human language (speech) way to ease our communication as well can be the first step in order to have machines as a step for ultimate humans.

This NLP which considerate for humans becomes a challenge to have in machines. As NLP is not only one thing to achieve it have series of requisites which given an anticipated invitation of challenges.

In order to acquire NLP in machines. Some requisites as knowledge, ambiguous nature, experience, thinking power and many more attributes should be integrated intellectually.

MATERIALS AND METHODS

In 1950's begins research on NLP (Booth, 1967; Locke and Booth,1955) translating automatically from Russia to England in a very limited manner. In 1961 reported NLP qualified work done in morphology, syntax and semantics from interpreting to generating which vary from theory to hardware. Speed processing problems are tried to resolve by Plath (1967) with the help of algorithms. Semantics emerged as a big challenge. In this year, they use linguistics semantics for knowledge representation introduced. Gerla (2000) AI is combined with NLP role.

Corresponding Author: Jana Shafi, Department of Computer Science, Prince Sattam Bin Abdul Aziz University, Al-Kharj, Saudi Arabia

In 1978, kinds of wood refine away of representing in linguistic and task processing abilities. Rustin (1973) promoted kinds of Woods (1978) and Winograd (1973) research. Bobrow and Collins (1975) proposed Semantic Networks. 1980's was expected and enlarge, NLP systems even for fantastic limited applications as it is now semantic oriented as well binded with AI. In 1980, Schank emphasized semantically driven NLP. This led to thedevelopment of logical programming.

Computational grammar theory also a very active area connected logic, knowledge representation including belief and intention of users. In 1990's grammatical logical approach ended up by the general purpose sentence processors like SRI core language engine and discourse representation. Lexical approach, parsing with head phrase structure are defined (Manning and Schuetze, 1968) led to stastical language processing which leads to NLP. This year also an evidence in managing apool of data on world wide web via information extraction and automatic parsing. Verobila speech recognition technology advanced in this phase (Wahlester, 2000). Jones (1992) marks as attend to combine formal theories and stastical data in a practical way as NLP (Wahlester, 2000). NLP improves a lot from six decades in the context of reasoning have spread from AI generally towards the verge of applications into NLP and have found the useful application at are then one level of processing.

Various applications are developed which are a good attempt towards our goal as a question-answering system, text critiquing, information retrieval, translation, gaming, summarization and grammar checkers. Natural Language statements which are use as propositions in the context of precisiation. PNL provides a system to how to convert propositions into generalizing constraints. Generalize constraint language introduced hard constraints and soft constraints. GCL also define semantics base by formulating relationship of variables as X has r J, O. GCL exempliified with various modalities constraints such as fuzzy, possibilistic, bimodal, usuality, fuzzy, probablistic, veristic, random, a successful attempt to precise content under various constraints (Shafi and Ali, 2012).

Problem statement: Usually to get propositions get precise it should be in the form of computation and deduction. Further to get into it is frame under PNL system and precision language which included mathematical languages as well LISP, prolog, SQL, predicate logic, modal logic and others related to them. The languages have obscurity to express propositions which express perceptions (Zadeh, 2004). For example, the proposition "All humans are mortal" can be precisiated by translation into the language associated with first-order logic but "Most Irish are tall" cannot.

RESULTS AND DISCUSSION

The prime feature attribute of PNL is that GCl is associated with Precisiation language. This attribute makes it possible to use PNL as a precistion language for perceptions.

GCL is unable to satisfy all propositions or perceptions to be precise. This is because of the complexity of propositions to be able to precise. Shafi and Ali (2012) the input proposal in PNL is that the meaning of a precisiable proposition, p in a natural language is a generalized constraint X has r J, O. In general, X, J, O and r are implicit, rather than explicit in p. Thus, translation of p into GCL maybe viewed as explicitation of X, J, O and r. The expression X hasr J, O will be referred to as the GC form of p, written as GC (p).

Viewing PNL:

$$\Sigma\text{Count (A/B)} = \frac{\Sigma\text{Count}(A \cap B)}{\Sigma\text{Count}(B)}$$

In PNL, a proposition, p is viewed as an answer to a question, q (Lehnert, 1978; Zadeh, 1986). To illustrate, the proposition p: Ruby is young may be viewed as the answer to the question q: How old is Ruby. More concretely: p: M is young→p*: Age (Ruby) is young q: How old is Ruby?→q*: Age (Ruby) is? R where p* and q* are abbreviations for GC(p) and GC(q) respectively.

In general, the question to which p is an answer is not unique. For example, p: Ruby is young could be viewed as an answer to the question q: Who is young. In most cases, however among the p ossible questions, there is one that is most likely. Such a question plays the role of a default question. The generalize constraint form of q is in effect, the translation of the question to which p is an answer (Fig. 1-3). The subsequent simple examples are anticipated to elucidate the procedure of translation from NL to GCL.

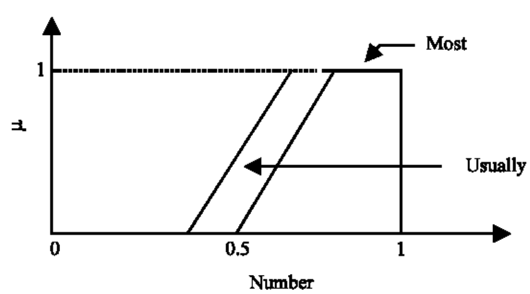

Fig. 1: Standardization of most and usually

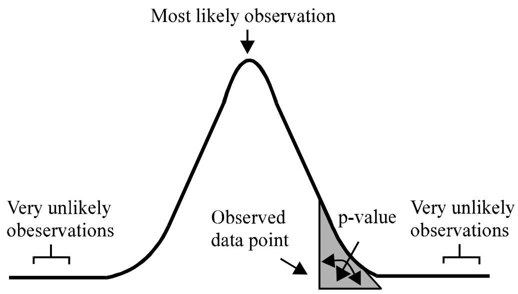

Fig. 2: Precisiation of very unlikely

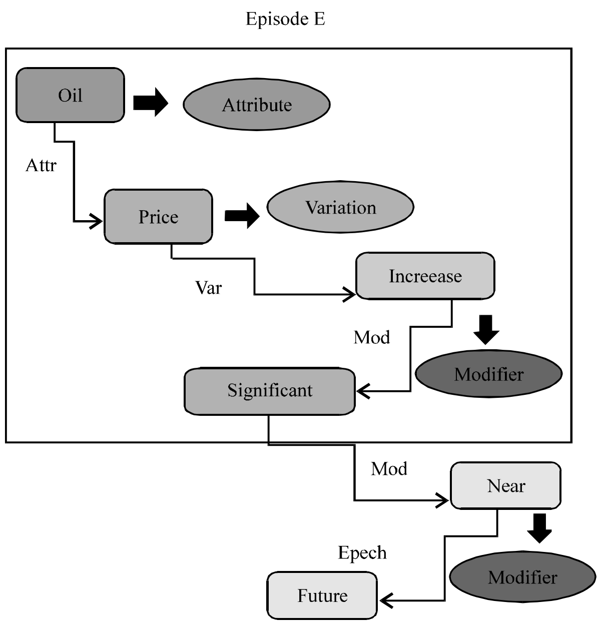

Fig. 3: Semantic Network of p (it is very unlikely that there will be a significant increase in the price of gas in the near future)

Explanation by examples:

Another example:
How is Bruce's office?

Brucehas large office

p:-Brucehas alarge office.
→ p*: Bruce has large (office)
q:-How is Bruce's office?
→ q*:-Bruce has? size (office)
p*, q*, d*
GC (p), GC (q), GC (d)

The translation of question to which p is an answer. The following simple examples are intended to clarify the process of translation from NL to GCL (Shafi and Ali, 2012)
p:-Tandy has many chocolates then Dana
→ ((Quantity (Tandy) Quantity (Dana)) has many chocolates.

Much chocolates: the is abinary fuzzy relation that has to be calibrated as a whole rather through the composition of much and older.
p:-Most Irish are tall.
→ To deal with the example, it is necessary to have a means of counting the number of elements in a fuzzy set.

With the simplest way relating to the concept of Σcount (sigma count). More specifically, if A and B are fuzzy sets in a space U = {u_1,.......,u_n} with respective membership functions μ_A and μ_B respectively, then:

$$\sum \text{Count}(A) = \sum_i \mu_A(\mu_1)$$

Relative count of elements of A that are in B is defined as
In which the membership function of intersection is defined as:

$$\mu_{A\cap B}() = \mu_A(u) \wedge \mu_B(u)$$

^ → min or-t-norm
Using the concept of sigma count, the translation in question may be expressed as:

Most Irish are tall:
ΣCount (tall.Irish/Irish) is most
Further

Irish has ΣCount (tall.Irish/People) mostly.
Where most is a fuzzy number represents fuzzy quantifier
P:-it is very unlikely that there will be a significant increase in the price of gas in the near future.

This proposition represents semantic network.
→ So in this representation
E is the main episode
E* is a subepisode of E.
Gas has high prices.
Gas price has increase
India has no more increase price of gas
E: a significant increase in the price of gas in the near future.
E*: a significant increase in the price of gas.
Near future is epoch E*.
GC form of p may be expressed as
Prob(E) has J, O
J is the fuzzy probability
"Very unlikely" whose membership function is related to that of "likely":

$$\mu_{\text{very unlikely}}(u) = (1-\mu_{\text{likely}})^2$$

Very:-intensifies that square membership function of its operand.
Membership functions of significant 'increase 'and 'near future'.

→ This degree may be employed to compute the truth value of p as a function of the probability distribution of the variation in the price of gas.

→ Use of PNL may be viewed as an extension of truth conditional semantics.

CONCLUSION

In this study, we observe GCL more deeply and dissected the problems face by GCL in describing perceptions. We represented semantic network associated with PNL generalize constraints in order to get precise propositions.

SUGGESTION

Semantic network of propositions will be an automatic stable hub of PNL producing an accurate semantics.

ACKNOWLEDGEMENT

Prince Sattam Bin Abdul Aziz University Riyadh, KSA encourages and funded us to publish this research.

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