DEFINING RELATIONS IN PRECISIATION OF NATURAL LANGUAGE PROCESSING FOR SEMANTIC WEB

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***Abstract*— As we know people using semantic web which facilitates them to organize, locate and process content. The content access by people comfortably is the natural language which we all use in our day to day life. The Semantic Web aims at complementing the current text-based web with machine interpretable semantics to facilitate automated processing and integration of the vast amount of available information. Given the enormous amount of textual data that is available online, it seems natural that these methods rely largely on the use of natural language processing techniques. The field of NLP has matured over the last decade to a point at which robust and scalable applications are possible in a variety of areas, and current Semantic Web projects are now poised to exploit this development. In this paper we define relations enables precisiation of natural language for question answer systems and to deduce answers for questions.**

Keywords: GCL, relations NLP.

I. INTRODUCTION:

Introducing natural language which is: Natural Language Processing is a theoretically motivated range of computational techniques for analyzing and representing naturally occurring texts at one or more levels of linguistic analysis for the purpose of achieving human-like language processing for a range of tasks or applications. [1].The semantic web is a web whose content can be processed by computers. It can be thought ofas an infrastructure for supplying the web with formalized knowledge in addition to its actualinformal content. [2]. we interpret Semantic Web research as an attempt to addressthe problem of information access: building programs that help users locate, collate, compare, and cross-reference content. As such, we strongly believe that theSemantic Web should be motivated by and grounded in the method of information access most comfortable to users—natural language. We believe that naturallanguage is the best information access mechanism for humans; it is intuitive, easy to use and rapidly deployable, and requires no specialized training. In ourvision, the Semantic Web should be equally accessible by computers using specialized languages and interchange formats, and humans using natural language.The vision of being able to ask a computer "when was the president of Taiwan born?" or "what's the cheapest flight to the Bahamas this month and getting back "just the right information" is very appealing.[3]Whereas Goal of natural language processing is to to accomplish human-like language processing. Basically, Natural language is then imprecise in nature. As shown in Fig.1. It is a System to describe perceptions. Perceptions can be anything for example; perception of Truth, distance, beauty and other attributes which are imprecise.

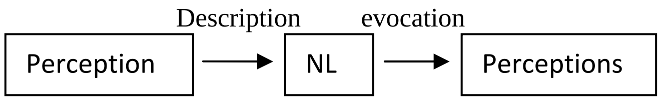


Fig. 1 perception base system

P: perception
NL (p): description of semantic entity
P^{+}: perception evoke by NL (p)
P^{+}: meaning of p
So how to precise this natural language?
A concept of precisation was developing dedicated for Question –Answering system. [6] Precisation in the sense of making it possible to treats proposition as objects computation as imprecise data can't be computed. Now PNL (Precise natural language)is the Generalized Constraint language whose elements are combination of generalize constraints.

II. RELATIONAL WORK

PNL provides the system for precisation of propositions expressed in Natural Language through translation into the generalize constraints then generalize constraints are propagated through the use of rules governing generalize constraints inducing on the answer to the question The Primary function of PNL is to provide a computational framework for precisation of meaning .PNL abandons Bivalence, [5] Thus, in PNL everything is, or is allowed to be, a matter of degree. Hence precisation cannot be achieved in bivalent logic.Generalized constraints Language have been introduced.

[A] Paper Organization

In the rest of this paper, Section 2 introduces the, GCL [7, 8, 9] (Generalize constraint language) and depicts its various modalities and its application.

[B] Concepts Of Generalize Constraints and Gcl

The problem in NPL is how to portray imprecise constraints which were known as elasticity or softness in elements. Forexample, "Exam starts from 2 pm".This sentence considers as a hard constraint .Lets analyze another sentence "It's about 6pm".This sentence consists of Elasticity or softness that restricts the values that a variable can take.

[i]. Hard Constraints - The Constraint which directly effects the variable and it does not have any possibility to vary in last example if Exam has to start from 2 pm then it has to.

[ii]. Soft Constraints - The Constraint which directly affects the variable and it does have probability to vary and never gives you exact result.as In last example the one unknown of the exact fact of 6 pm because it may be 6 or near about 6 or more thansix. So variations taking place which is said to be soft.Hard constraints refers to existing Bivalent Logic as Bivalent constraint (hard, inelastic, categoral:).We can define Bivalent as
X€C,
Where C depicts constraining bivalent relations.
Coming to the topic of this paper,
Definition Generalize Constraint base semantics –A proposition p in a natural language may be interpreted as an implicit assignment statement's assigns implicit values to an implicit variable X.

X hasr J O
Where,
X-Constrained Variable
Has-depicts relation
r-discrete-valued model variable, modality of the constraint
J-relations, specification, adjectives, status
O-object, value
The constrain variable may be

- X is an n-ary variable, X= (X1, …, Xn)
- X is a proposition, e.g., Leslie is tall
- X is a function of another variable: X=f(Y)
- X is conditioned on another variable, X/Y
- X has a structure, e.g., X= Location (Residence(Carol))
- X is a generalized constraint, X: Y isr R

- X is a group variable. In this case, there is a group, G: (Name1, …,Namen), with each member of the group, Namei, i =1, …, n, associated with an attribute-value, hi, of attribute H. hi may be vector-valued. Symbolically
- G = ($Name_1$, …, $Name_n$)
- G[H] = ($Name_1/h_1$, …, $Name_n/h_n$)
- G[H is A] = ($\mu_A(h_i)/Name_1$, …, $\mu_A(h_n)/Name_n$)
- Basically, G[H] is a relation and G[H is A] is a fuzzy restriction of G[H]

[iii]. Generalized Constraint—Modality r

X hasr J O

r:= equality constraint: X=R is abbreviation of X is=R
r: ≤inequality constraint: X ≤ R
r:⊂subset hood constraint: X ⊂ R
r: blankpossibilistic constraint; X is R; R is the possibilitydistribution of X
r: vveristic constraint; X isv R; R is the veritydistribution of X
r: p probabilistic constraint; X isp R; R is the probability distribution of X
r: bm bimodal constraint; X is a random variable; R is a bimodal distribution
r: rs random set constraint; X isrs R; R is the set- valued probability distribution of X
r: fgfuzzy graph constraint; X isfg R; X is a function and R is its fuzzy graph
r: u usuality constraint; X isu R means usually (X is R)
r: g group constraint; X isg R means that R constrains the attribute-values of the group .[4,10]

[C] MODALITIES WITH EXAMPLE

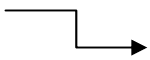
[i]. *Possibilistic Constraint*

X hasr J O
r=blank
X has J O
For example:
John has pen.
In the above example J is blank and r is blank as possibility is depicted by blank.
John has green pen.
J=green

[ii]. Fuzzy Set

J plays the role of possibility distribution of X
Thus, if U={u}is the universe of discourse in which X takes its values ,then 'J 'is a fuzzy subset of U and the grade of membership of u in J,μ_j(u)is the possibility that X=u. In fig.2 it is shown
μ_j (u) =Poss. {X=u}

P:"X has small number"



Represents the possibility distribution of X

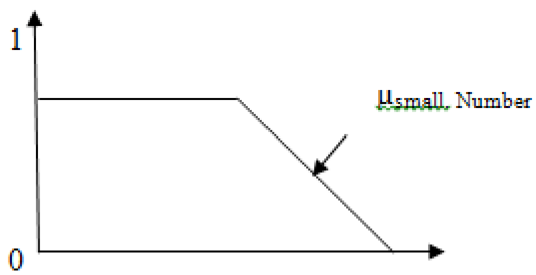


Fig.2. Trapezoidal function of small number

[iii]. Probabilistic Constraint

Represented as
X hasp J O
P=Probability
For Example:
Joy hasp more than two pens.
X=Joy
P=probability of more than two pens
J=status
O=pen

[iv]. Random Variable

X hasrs J O
X is normally distributed random varandiable
rs is a random fuzzy set.
X hasrs (0.3\small+0.5\medium+0.2\large)
X is random variable that takes fuzzy sets small, medium and large as its values with respective probabilities 0.3, 0.5 and 0.2.

[v]. Veristic Constraint

J is a fuzzy set that plays the role of the verity (truth) distribution of X
For example:
Élan is wealthy has three houses, two offices and two car.
Here we consider only 'has 'part and assuming
"Élan is wealthy"=X
Now analyzing the sentence
X has three houses, two offices and two cars
Wealthy=describes fuzziness
Ethnicity (Élan) hasv|three houses+0.5|two office+0.25|two car+0.25
Élan is wealthy (0.5) is true.

[vi]. Usuality Constraint

J plays the role of usual value of X
For example
X has usually small number
Usuality: plays the role of commonsense knowledge and perception based reasoning.

[vii]. Fuzzy Constraint

The constrained variable is a function f,and J is its fuzzy graph.
A fuzzy graph constraint is represented as
F hasfg($\sum_i A_i \times B_{j(i)}$)O
A_i and $B_{i(i)}$ are fuzzy sets where in $B_{j(i)}$-j dependent on I, are the granules of X an Y respectively and $A_i \times B_{j(i)}$ is the Cartesian product of A_i and $B_{i(i)}$.
Fuzzy graph may be expressed as a collection of fuzzy if then rules of the form.
If X has A_i then Y has Bj $_{(i)}$
i=1… m;
j=1… n;
For example:

Fhasfg (small×small+medium×large+large×small) O.
May be expressed as a rule set:

If X has small number then Y has small number
If X has medium value then Y has large value
If X has large value then Y has small value
Such a rule sets as
P: may be interpreted as a description of a perception of f.

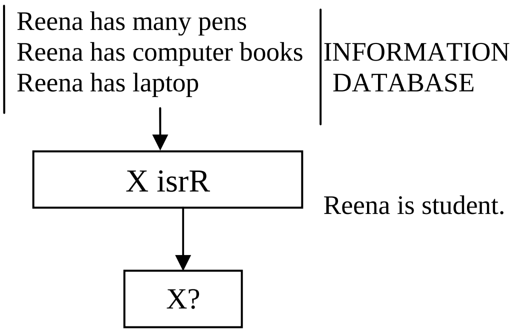
[viii]. Bimodal Constraints

Involves combination of –probabilistic,-possibilistic.
More specifically, in the generalize constraint
X hasbm J O
X-Random variable
J-bimodal distribution
P of X with P expressed as
P: $\sum_i P_{j(i)}\backslash A_i$, in which A_i are granules of X.
$P_{j(i)}$-with J dependent on i.
For Example:
If X is a real-valued used random variable with granules labeled –small,-medium,-large
And probability granules,-low,-medium,-high then
X hasbm(low\small+high\medium+low\large)O
Which means that?
Prob{X has small value} is low
Prob{X has medium value} is high
Prob{X has large value} is low.
It plays a key role in perception base calculus of probability reasoningIt may be possible generalize constraints compose of other generalize constraints constitutesGeneralise constraint Language.
For Example:
Generalize constraint in GCL is
(X has A O) and ((X, Y) has B O)
A-probability distribution
B-possibility distribution
$P(X) = P_{i\,(1)}\backslash A_1 + P_{i\,(2)}\backslash A_2 + P_{i\,(3)}\backslash A_3$
Prob{X has A_i O} is $P_{j(i)}$

III. APPLICATION

This concept can be useful for Information Database where all relations of Objects are store and then deduce in order to give exact answer to the question ask in this system.

For Example



Who is Responsible for answers Reena?

There are some answers which does not need any deductions For Example:

Q*-How is Neils office?

P*- Neil has large office.
*-approximation
This is GC (p), GC (q).

IV. CONCLUDING REMARKS

In this paper, The Key idea in PNL is that meaning of a precisable proposition, p, in a natural language is a generalize constraint X hasrJ O (implicit).Translation of p(proposition)into GCL may be viewed as explicationof X,J,O,r.It offers a Question-Answering system an approach through which many precise matching propositions can be deduce to an answerable precise propositional which can be said concluded form of various propositions.

V. FURTHER FUTURE WORK

Future Work involves many Generalize forms which can be used for mathematical, biological and various computations. The question-answering system can lead to an era of voice semantic search engines engrave with Natural language.

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