Natural Languauge Fuzzy Set Based CBIR

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Abstract: Not much is understood in terms of semantics of natural language applicable in CBIR. There are many linguistic systems, often based on set theory and logic, attempting to grasp (at least some phenomena and circumstances) of the natural language based on which a image might understood or interpreted and thereby be annotated with , and it must useful in such way that it reduces the cost of accessing the relevant information and remains refresh all together with open ended structure to incorporate the validity of ground truths. In this research work we have tried to come all these issues and results shows that our method used in building natural language sets for images in question is highly relevant thus enriching results to provide high recall and precision value of range of 67% .

IndexTerms: fuzzydataset,linguistic,raw symbolism, semantic.

I. NTRODUCTION

As there is movement towards building systems that works and behave like humans ,this paper explores the possibility of developing a content based system that takes input from human subjects specific to their domain knowledge [4] which is expressible in local dialects , therefore, stands to reduce the man machine gap while it is in use . However the problem remains ,How to reason and compute with information described in natural language and associate it with each image's content which is of course numerical in nature. The basic importance of this problem derives from the fact that much of human knowledge—and especially world knowledge—is expressed in natural language, there a incremental progress in the field of CBIR can only be done if the system incorporates these natural language terms , phrases and sentences and associate with image in such a manner that it is correct to ground truth depicted in the image and user of the system gets a real useful information .

Since an image content is contained by a multitude of concrete and abstract objects, which may be seen in terms of recurring, constant conjunction of properties based on which the object segmentation algorithm works. In linguistic terms such conjunctions are expressed as nouns, non-recurring conjunctions are symbolised as phrases or clauses.

Such objects come into being, fade out of existence or, if already exist, can change their properties either as a result of a spontaneous process, chance or in accordance with a purpose i.e. as per specifications due to interpretation of objects by human subjects depicted in image content .

Here , the major question is how such an temporal and inferential structure of the image objects are which are inferred from highly subject inference of the use and how it can be created by converting aspects of natural language not just into the `raw symbolism' [3], but into a formal language which is capable of being expressed as `annotated Information with content of the image thus carrying the adjectives, adverbs and verbs that can be written as fuzzy sets .Therefore the natural language fuzzy sets, based on this logical inference The problem formulation took its shape , which is explained in the next section .

II. PROBLEM FORMULATION:

The is a need to develop a CBIRs which have high relevancy in the results , The ideal CBIR [2]system from a user perspective would involve what is referred to as semantic retrieval, where the user makes a request like "find pictures of red flowered printed rain coat". This type of open-ended task is very difficult for system to understand , infer and get correct results . Moreover , the Usefulness of the Information Retrieval System must be of high standards ,if the information is not useful, which may be due to a failure of the underlying search technology, low-quality information, or a mismatch between the information provided and the immediate task at hand and not understanding semantics of domain knowledge and then , if the information is useful, but is already known and has already been used or discarded, then again we have issue with the information system .

Furture, it may be also be understood that existence of the information is even known, but it is not worth the effort to search for it through other means. For example, the CBIR may provide an exact color and technical specification when otherwise an author would paraphrase waste time in query formulation. By presenting the information directly, the cost of accessing the information is greatly decreased. Further , if the information provided by the CBIR is not itself useful, but it indicates the existence of other information that might be valuable. For example, a CBIR might present a piece of information that is related to a current technical datasheet, but provides no information that can be directly applied to the task at hand with no instructions on how to do ?., this issue must also be resolved and overcome while developing the CBIR. Lastly , It is always desirable the CBIR must decreases the cost of accessing the full information suggested and also increases the expected benefit of retrieving the document/information based on the summary of content of image instances

III. PROPOSED SOLUTION TO THE PROBLEM:

The basic idea behind the solution is to develop a system that works on annotation scheme to remain relevant in local language or artistic sensibilities of that area[8]and works focused on domain specific and topic specific, and this we build on natural language fuzzy datasets of labels/ tags that that are attached with the meaningful bundle of pixels in an image works primarily on the understanding of CBIR must

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match the nature of thinking of human .

IV. RESULTS

Table 1 : Calculations of Recall and Precision (Example Query =’Rajasthani Suit’)

1	**Total no. of images in database**	1000
2	**Total number of annotations for each image**	**Euler Number *Number OfColor Features**
3	**Total number of correct relevant image results**	**190**
4	**Total number of Relevant Image results in the database but not shown**	**10**
5	**Total number of Relevant Annotation ((natural language words ,keywords etc)results in the database but not shown**	**5**
6	**Total no. of Irrelevant Images results**	**40**
7	**Total no. of Irrelevant Annotation results (natural language words ,keywords etc**	**3**
8	**Total number of correct relevant annotation results (natural language words ,keywords etc)**	**2**
9	**Recall Percentage**	**190/1000*100**
10	**Precision**	**190/190+40*100**

V. INTERPRETATION OF GRAPHS AND TABLES

A. The average recall [6] and precision[7] values [image and annotation based] of the proposed system are as shown in Fig [1] and Fig[2], where the recall value (in percentage) for each query has been calculated ,it is shown as a line graph . The framework applied in proposed system is for run different queries that run on the instance dataset and the standard situation where competing results are obtained on the same data.

B. The shape of the graph shows that the precision value remains in a bracket of 50-67% and the graph for each unique query produces significant amount of results from the total database. So based on the formula of precision, it can be understood that close to 2/3rd of the results are relevant from the total results. the overall average precision value which is calculated to be 67%, it can be inferred that the system is able to retrieve results close to what the user is expecting. So degree of semantic gap reduction can be inferred and understood**.**

VI. COMPARATIVE ANALYSIS

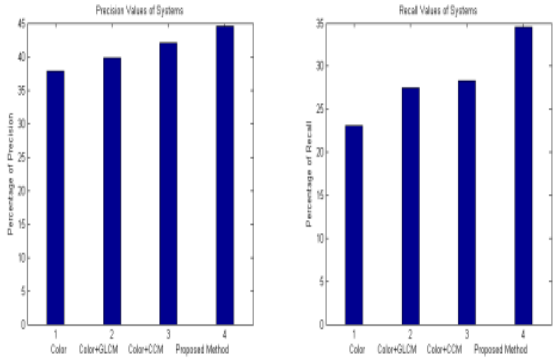

Figure:1&2 Recall and Precision Graphs of the CBIRs

No study is complete unless there is incremental advancement in the research work conducted , therefore , we are giving an comparative view of the various possible systems as per [1] , reach paper with our proposed system , as it can be seen that we are moving up in terms of fusion of muti-model features for selecting right kind of numeric values which can be annotated , co-related with the high level concepts .thus moving closer to the steps of reducing semantic gap .The value of both the Precision and recall percentage have increased as it it apparent from the above graphs as compared to previous systems of CBIR . This can be attribute to the fact , that our system is domain focused and what user is expecting from the content of images is also of high quality technical information which is useful for his task , therefore , the quality of queries is also one factor for getting right and relevant results .

VII. CONCLUSION AND DISCUSSION

After conducting the research we can conclude that:

A. The precision value obtained by the proposed method is close to 67% which is fairly good enough as it shows that the user is getting more than 2/3rd of the information quite relevant out of the total results retrieved for the query inquired by the user. The precision value obtained by the previous method ‘[1]’ was close to 42%.

B. The recall value obtained by the proposed method is close to 43% which reflects that the image quality and the associated information fed into the system while developing its database is significant in aiding technical work for the said textured images based domain users and on an average, for each query fired at the system, more than 1/3rd of the images normally remained relevant in overall result sets. The recall value obtained by the previous method ‘[1] was close to 28.3%.

C. We can also infer that since both precision and recall are therefore based on an understanding and measure of relevance our results are good enough to show this fact .

VIII. FUTURE SCOPE

For future work we suggest that more work should be done to enchase the value of the system, the system should not just keep on adding more and features like texture , color , shape etc , but must also incorporate some self growing annotation schemes which work with the local human based keywords , sentences and phrases .

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