ISSN:0975-9646

GRF: Greedy Based Relevance Feedback Algorithm for Retrieval of Multimedia Object

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ABSTRACT- The perspective of multimedia object retrieval is the matching of relevant object in the image collection based on user query in a large database. In the past years, there is a comprehensive enhancement under content-based image retrieval system (CBIR).However, performance of the system need to be faster. Recent work has described various approaches and schemes that would have been expensive and difficult to arrange. There are several other methods which include query expression according to user needs. From the catalogue of retrieval techniques, Relevance Feedback enriches query refinement process. This paper proposes an algorithm for relevance feedback based on greedy approach to enhance the retrieval method. The greedy algorithm is used to sum up the performance of multimedia object retrieval system by using Relevance feedback technique. The main focus of the paper is to analyze how this greedy aspect of Relevance Feedback can be consolidated into existing retrieval system.

Keywords: Relevance Feedback, Greedy approach, GRF, Object retrieval

I. INTRODUCTION

The aim of Content based image retrieval (CBIR) is used to evaluate and retrieve multimedia objects in proficient and well-organised manner. During Searching in an enormous amount of database for a given query, user is expecting the output either based on level-wise search or objective search. The level-wise search includes a collection of identical set of items based on the query. The objective search is to obtain the optimal results based on query. Before all else, feedback is used for respective evaluation. Clearly, certain items are not essentially the desired output but still confined to the required output. Relevance Feedback mechanism is a powerful and interactive tool based on user activities. Various studies have explored the fact that relevant document is selected on the basis of click through mechanism in search engine results. In addition, it is difficult to provide flexibility to the user in case the user is greedy.

On the assumption, for a given query a greedy user is demanding a desirable solution. To obtain significant and relevant output, relevance feedback is required for retrieving desired information. For this purpose, we propose a greedy algorithm to upgrade retrieval procedure.

II. QUERY BASED RETRIEVAL USING RF

The notion of Relevance feedback (RF) is to refine user's query in the retrieval mechanism so as to enhance the final output set. Primarily, in the initial collection of feedback, the output is given by the user on the relevancy of document. The primitive strategy behind RF is as follows:

1. The user launches the query.
2. The system acknowledges an elementary collection of retrieval output.
3. The users label some object as relevant and some as irrelevant.
4. Based on the feedback given by the user, the system computes an improved representation of the desired information.
5. Finally, the system exhibits an updated retrieval output set.

Relevance feedback is an effectual and powerful approach for enhancing the integrity of retrieval process.

III. RETRIEVAL BASED ON GREEDY RELEVANCE FEEDBACK TECHNIQUE

Relevance Feedback contributes in the query refinement process. Following figure gives an idea about relevance feedback based on greedy approach so as to enrich the performance of retrieval method. When the user Input data, the component of specified data is abstracted from the multimedia database. Based on Resemblance pattern and resemblance catalogue, the required output is obtained. The output is send to the user, in case, the user is greedy and the output does not satisfies the requirement of greedy user. Then, the greedy user uses relevant data so as to apply it on Greedy Relevance Feedback (GRF).GRF matches the relevant object in the image collection based on user query in an enormous amount of database.

IV. GREEDY BASED RELEVANCE FEEDBACK (GRF) ALGORITHM

GRF algorithm is based on greedy approach which makes use of Relevance Feedback strategy. This efficacious algorithm enhances the retrieval performance.

Given a set of n query $\{q_1, q_2, ..., q_n\}$. Initially we determine a set of retrieved output R_i for each q_i. Then we evaluate from each R_i, the relevant object r_{ij}. Elect is a function that elects input from relevant output set, R_k. It selects similar objects which are represented orderly and objects are not eliminated if component of the query fail out.

Conjugate function is used to combine all the solution that has highest relevant score.

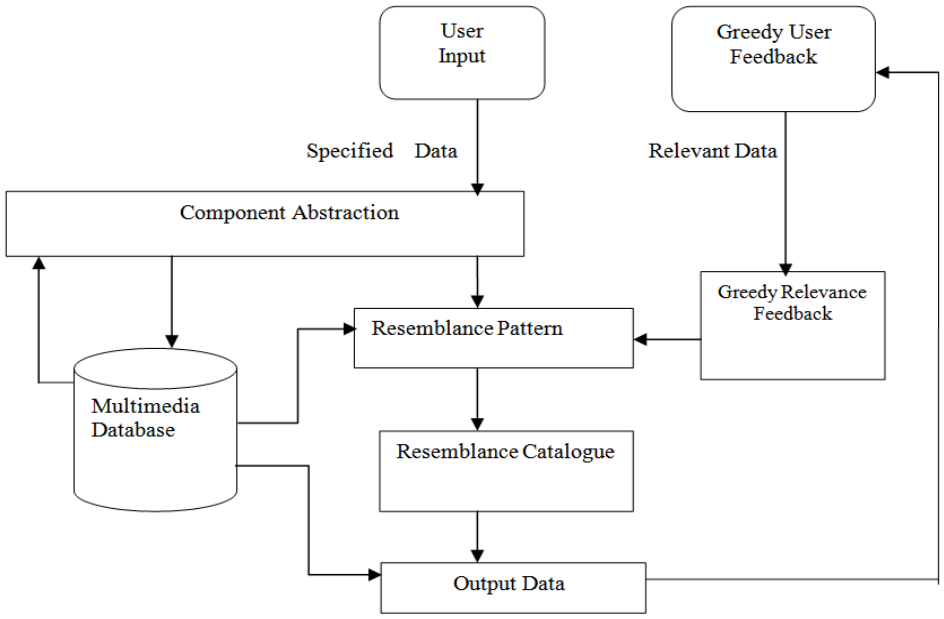

Figure 1: Working of Greedy Relevance Feedback

For each query q_i (i=1 to n) obtain a set of retrieved output, R_i ;
For each set R_i (i=1 to n) ,do
For each label data r_{ij} in R_i , do
For each set R_k (k=1 to n & k≠ i) , Compute the solution Elect((r_{ij} , R_k);
Compute the total relevance score of r_{ij}, Conjugate(r_{ij} , R_k) ;
Choose the object r_{ij} in R_i with the best score and combine the chosen object into the set R.

Fig 2: ALGORITHM GRF (Greedy based Relevance Feedback)

V. CONCLUSION

The first merit of GRF algorithm is that it updates query accordingly.GRF uses greedy approach based on subset criterion. Greedy approach works in stages, all in all one input at a time. The second merit of GRF is that user does not need to create a query revelation in the manner as using BOOLEAN OPERATORS (AND,OR,NOT) .The third merit, it provides flexibility when the user enter retrieval system without prior knowledge of searching strategy or training in creating queries.

Despite the fact that GRF algorithm represents potential development, there are few inexplicable problems. Firstly, query refinement in level-wise search. Second, retrieving additional consistent output set. These are few issues for our future work.

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