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A Novel Multimedia Question Answering Approach for Multimedia Answers By Yield Web Information

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ABSTRACT:

Community question answering (cQA) services have gained popularity over the past years. It not only allows community members to post and answer questions but also enables general users to seek information from a comprehensive set of well-answered questions. However, existing cQA forums usually provide only textual answers, which are not informative enough for many questions.

In this paper, we propose a scheme that is able to enrich textual answers in cQA with appropriate media data. Our scheme consists of three components: answer medium selection, query generation for multimedia search, and multimedia data selection and presentation. This approach automatically determines which type of media information should be added for a textual answer.

It then automatically collects data from the web to enrich the answer. By processing a large set of QA pairs and adding them to a pool, our approach can enable a novel multimedia question answering (MMQA) approach as users can find multimedia answers by matching their questions with those in the pool.Different from a lot of MMQA research efforts that attempt to directly answer questions with image and video data, our approach is built based on community-contributed textual answers and thus it is able to deal with more complex questions. We have conducted extensive experiments on a multi-source QA dataset. The results demonstrate the effectiveness of our approach.

Keywords :

Question answering; multimedia search; reranking; search diversification; query generation.

INTRODUCTION:

Multimedia refers to content that uses a combination of different content forms. This contrasts with media that use only rudimentary computer displays such as text-only or traditional forms of printed or hand-produced material. Multimedia includes a combination of text, audio, still images, animation, video, or interactivity content forms. Multimedia is usually recorded and played, displayed, or accessed by information content processing devices, such as computerized and electronic devices, but can also be part of a live performance. Multimedia devices are electronic media devices used to store and experience multimedia content. Multimedia is distinguished from mixed media in fine art; by including audio, for example, it has a broader scope. The term "rich media" is synonymous for interactive multimedia. Hypermedia can be considered one particular multimedia application.

Question Answering (QA) is a computer science discipline within the fields of information retrieval and natural language processing (NLP), which is concerned with building systems that automatically answer questions posed by humans in a natural language. When compared to keyword based search systems, they are way better as they greatly Facilitate the communication between humans and computer systems by stating the user's intentions through plain sentences. It will also avoid the need of painstaking browsing of a vast quantity of information returned by the search engines for the correct answers. However fully automated QA systems face a number of challenges that are not easy to tackle, for example:.

1)The lack of deep understanding of complicated questions.
2)The lack of sophisticated semantic, syntactic and conceptual processing to generate answers.

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Basically, we found that automated QnA (Question and Answer) forums cannot obtain results that are as good as those generated by human intelligence.This is where Community Question Answering Services came into the picture Through "Community Based Question Answering" forums, people can seek answers to questions that their knowledge on any specific problem which is of interest to some other user. Community Based Question Answering forums give better answers to questions because unlike automated answering systems, they are based on human intelligence.

A huge amount of question and answer pairs have been accumulated in the repositories over the years. For example –Wiki Answers – one of the most well known hosts more than 13 million well answered questions in 7000 different categories (as of 2011).Some other examples of "Community Based Question Answering" sites are Ask.com, Tutorialpoint.com, Indiabix.com,Youtube.com, Yahoo Answers.com etc.

Our system contains four main components:

» User Module – Login and Answer medium selection.

» Web Crawler

» Indexing and Searching using Apache Lucene

» Result Presentation

PROBLEM :

Along with the proliferation and improvement of underlying communication technologies, community QA (cQA) has emerged as an extremely popular alternative to acquire information online, owning to the following facts. First, information seekers are able to post their specific questions on any topic and obtain answers provided by other participants. By leveraging community efforts, they are able to get better answers than simply using search engines. Second, in comparison with automated QA systems, cQA usually receives answers with better quality as they are generated based on human intelligence. Third, over times, a tremendous number of QA pairs have been accumulated in their repositories, and it facilitates the preservation and search of answered questions.

For example, Wiki Answer, one of the most well-known cQA systems, hosts more than 13 million answered questions distributed in 7,000 categories (as of August 2011).

DISADVANTAGES OF EXISTING SYSTEM:

• Fully automated QA still faces challenges that are not easy to tackle, such as the deep understanding of complex questions and the sophisticated syntactic, semantic and contextual processing to generate answers.

• Existing cQA forums mostly support only textual answers unfortunately, textual answers may not provide sufficient natural and easy-to grasp information.

These question answer forums give us a way to:

» Request information that we do not know

» Check information that we are not sure of

» Interact with people around us and see things from their perspective and they also help us to

» Fulfill our needs at the same time.

In this paper, we propose a novel scheme which can enrich community-contributed textual answers in cQA with appropriate media data. It contains three main components:

(1) Answer medium selection. Given a QA pair, it predicts whether the textual answer should be enriched with media information, and which kind of media data should be added. Specifically, we will categorize it into one of the four classes: text, text+videos, text+images, and text+images+videos. It means that the scheme will automatically collect images, videos, or the combination of images and videos to enrich the original textual answers.

(2) Query generation for multimedia search. In order to collect multimedia data, we need to generate informative queries. Given a QA pair, this component extracts three queries from the question, the answer, and the QA pair, respectively. The most informative query will be selected by a three-class classification model.

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(3) Multimedia data selection and presentation. Based on the generated queries, we vertically collect image and video data with multimedia search engines. We then perform re-ranking and duplicate removal to obtain a set of accurate and representative images or videos to enrich the textual answers.

Our proposed approach in this work does not aim to directly answer the questions, and instead, we enrich the community-contributed answers with multimedia contents. Our strategy splits the large gap between question and multimedia answer into two smaller gaps, i.e., the gap between question and textual answer and the gap between textual answer and multimedia answer. In our scheme, the first gap is bridged by the crowdsourcing intelligence of community members, and thus we can focus on solving the second gap. Therefore, our scheme can also be viewed as an approach that accomplishes the MMQA problem by jointly exploring human and computer. Fig. 3 demonstrates the difference between the conventional MMQA approaches and an MMQA framework based on our scheme. It is worth noting that, although the proposed approach is automated, we can also further involve human interactions. For example, our approach can provide a set of candidate images and videos based on textual answers, and answerers can manually choose several candidates for final presentation.

ADVANTAGES OF PROPOSED SYSTEM:

» The results of the media resource analysis are also regarded as evidences to enable a better answer medium selection.

» For multimedia data selection and presentation, we propose a method that explores image search results to replace the original text analysis approach in judging whether a query is person-related or not.

» We introduce a new metric to measure how well the selected multimedia data can answer the questions in addition to the simple search relevance. We also investigate the cases that textual answers are absent.

Literature Survey:

Answering (QA) is a technique for automatically answering a question posed in natural language.

Compared to keyword based search systems, it greatly facilitates the communication between humans and computer by naturally stating users' intention in plain sentences. It also avoids the painstaking browsing of a vast quantity of information contents returned by search engines for the correct answers. However, fully automated QA still faces challenges that are not easy to tackle, such as the deep understanding of complex questions and the sophisticated syntactic, semantic and contextual processing to generate answers. It is found that, in most cases, automated approach cannot obtain results that are as good as those generated by human intelligence. One definition of a question could be 'a request for information'.

But how do we recognize such a request? In written language we often rely on question marks to denote questions. However, this clue is misleading as rhetorical questions do not require an answer but are often terminated by a question mark while statements asking for information may not be phrased as questions. For example the question "What cities have underground railways?" could also be written as a statement "Name cities which have underground railways". Both ask for the same information but one is a question and one an instruction.

People can easily handle these different expressions as we tend to focus on the meaning (semantics) of an expression and not the exact phrasing (syntax). We mainly focus Definition questions, which unlike factoid questions require a more complex answer, usually constructed from multiple source documents. Retrieving the data for constructing an answer to the question is done by means of WebCrawlers. A Crawler is a program that downloads and stores web pages, often for a web search engine. Roughly, a crawler starts off by placing an initial set of URLs, so, in a queue, where all URLs to be retrieved are kept and prioritized.

From this queue, the crawler gets a URL (in some order), downloads the page, extracts any URLs in the downloaded page, and puts the new URLs in the queue. This process is repeated until the crawler decides to stop. Collected pages are later used for other applications, such as a Web search engine or a Web cache. As the size of the web grows, it becomes more difficult to retrieve the whole or a significant portion of the web using a single process.

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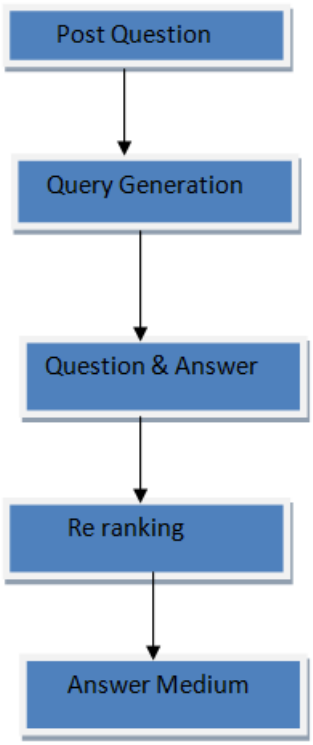
Therefore, many search engines often run multiple processes in parallel to perform the above task, so that download rate is maximized. We refer to this type of crawler as a parallel crawler.

Architecture:



IMPLEMENTATION:

Answer Medium Selection:

Given a QA pair, it predicts whether the textual answer should be enriched with media information, and which kind of media data should be added. Specifically, we will categorize it into one of the four classes: text, text+image, text+video, and text+image+video1. It means that the scheme will automatically collect images, videos, or the combination of images and videos to enrich the original textual answers.

Query Generation for Multimedia Search :

In order to collect multimedia data, we need to generate informative queries. Given a QA pair, this component extracts three queries from the question, the answer, and the QA pair, respectively. The most informative query will be selected by a three-class classification model.

Multimedia Data Selection and Presentation :

Based on the generated queries, we vertically collect image and video datawith multimedia search engines. We then perform reranking and duplicate removal to obtain a set of accurate and representative images or videos to enrich the textual answers.

Reranking:

If a query is person-related, we perform face detection for each image and video key-frame. If an image or a key-frame does not contain faces, it will be not considered in reranking. After reranking, visually similar images or videos may be ranked together. Thus, we perform a duplicate removal step to avoid information redundancy. We check the ranking list from top to bottom. If an image or video is close to a sample that appears above it, we remove it.

CONCLUSION :

In this paper, we describe the inspiration behind the making and evolution of "A Multimedia Answer Generation System". As it is analyzed that the existing approaches mainly focus on narrow domains, therefore aiming at a more general approach, we developed the system to answer questions using media data thereby making the answers much more informative and easy to understand. The answers obtained are very relevant and to the point. For a given QA pair, the user first predicts which type of medium is appropriate for enriching the original textual answer and selects the desired answer medium he/she wants. Following that, our system crawls the web and retrieves web pages of the concerned content type and stores them in the frontier for retrieval later on. we describe the motivation and implementation of Multimedia question answering system. For a question, retrieve question answer pair from the available question answering sites database and select an answer medium to enrich the textual answer. Then generate a query for the multimedia search, resulting data are undergoes duplicate elimination and irrelevant data removal. Finally present the answer that contains textual data, images and videos. In our study, we find out that this image and video data provided with the textual answer will take some seconds than the normal access. So in future these problems need to solve.

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FUTURE WORK:

Further on, by using apache lucene we search the indexed documents to obtain the ones matching the keywords extracted from the question and display the desired results. On the other hand we have also observed some failure cases. For example, the system may fail to generate reasonable multimedia answers if the generated queries are very complex. For several questions videos are enriched, but actually only parts of them are informative and so, presenting the whole videos can be misleading. Another problem is the lack of diversity of the generated media data, which gives a scope for future enhancement of the system. All in all, we can safely conclude that since our system is based on community contributed answers, it can thus deal with more general questions and can achieve better performance as the answers give us the required information through the desired content type. Therefore we have successfully achieved our goal of obtaining an efficient "Multimedia Answer Generation System"..

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