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## MULTI KEYWORD WEB CRAWLING USING ONTOLOGY IN WEB FORUMS

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### Abstract

Internet forums are in the main used for discussions where users can request and exchange data with others. Forum contains form of topics associated with user interest. The goal of net travel is to retrieve forum content with smallest overhead. The target of the net crawlers is to send users from entry page to thread page. The thread page contains data content relevant to user question. The projected net travel primarily based on the mechanism that supports multiple keyword based retrieval using ontology. Ontology helps the crawler to extract and aggregate information from a specific domain. This proposed methodology addresses the uniform resource locator kind recognition drawback to get rid of the duplicate and unwanted pages. The strategy is evaluated exploiting SVM classifier and located to be higher than existing systems.

**Keywords:** Crawlers, Ontology, SVM Classifier

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### I. INTRODUCTION

Web forums are mainly used for discussion among users and to extract useful information from it. There are varieties of data present in these forums in formats. For example the Thyroid Forum is a place where people can raise query related to it and get answers. The forums contain a rich variety of information that is unstructured or structured data[11], Q&A pairs[5], ranked product features that are grouped using opining mining from forum posts. To get an idea from forum their content must be downloaded first, some crawler adopts breadth first crawling strategy but it is ineffective and inefficient because it visits from root node at each time of crawling. Many duplicate links that point to a common page with different URL, normal crawler blindly follow these links to crawl many duplicate pages this makes crawlers should be ineffective. iRobot for forum operators to instruct web crawlers on how to crawl a site effectively it covers 47% to crawl by using breadth first crawler.

These problems can be solved by using supervised forum crawler to remove unwanted and duplicate pages. The idea is to crawl relevant content with smallest overhead. It navigation path from entry page to thread page. Links are provided between the pages to find its destination pages. Links between an entry page and an index page or between two index pages are referred as index URLs. Links between an index page and a thread page are referred as thread URLs. Links connecting multiple pages of a board and multiple pages of a thread are referred as page-flipping URLs.

A crawler starting from the entry URL only needs to follow index URL, thread URL, and page-flipping URL to traverse EIT paths that lead to all thread pages. This supervised crawler is compared with generic breadth first crawler, iRobot crawler[3], structure driven crawler[11]. The supervised crawler outperforms these crawlers in terms of effectiveness and coverage. We design a entry URL discovery method to ensure high coverage, forum crawler should start from entry URLs it is helpful to overcome such problem.

The multi keyword web crawling can be used for specific area to retrieve the particular content. It deals with ontology used for finding similarities between the keywords. Based on the ranking the keyword match with specific content it must be retrieved. It uses the support vector machine to predict the data. Radial Basis Function kernel SVM used to measure the similarities between the examples.

Compared linear kernel SVM with radial basis function kernel SVM, linear kernel SVM does not perform high dimensionality in large text data set. So we move in to RBF kernel to achieve the high accuracy and data should identified as it should be correct or not. The same process in the existing can be used for thread page identification by using RBF kernel to increase the data should retrieve in particular domain.

## II. RELATED WORK

R.Cai, J.M. Yang, W.Lai, Y.Wang and L.Zhang[3] iRobot, which has intelligence to understand the content and the structure of a forum site, and then decide how to choose traversal paths among different kinds of pages. To do this, we first randomly sample a few pages from the target forum site, and introduce the page content layout as the characteristics to group those pre-sampled pages and re-construct the forum's sitemap. After that, select an optimal crawling path which only traverses informative pages and skips invalid and duplicate ones.

The extensive experimental results on several forums show the performance of our system in the following aspects: 1) Effectiveness – Compared to a generic crawler, iRobot significantly decreases the duplicate and invalid pages; 2) Efficiency – With a small cost of pre-sampling a few pages for learning the necessary knowledge, iRobot saves substantial network bandwidth and storage as it only fetches informative pages from a forum site; and 3) Long threads that are divided into multiple pages can be re-concatenated and archived as a whole thread, which is of great help for further indexing and data mining. iRobot learns URL information to discover new in crawling, but URL location might be invalid when page structure changes.

H.S.Koppula, K.P.Leela, A.Agarwal [7] they present a set of techniques to mine rules from URLs and utilize these rules for de-duplication using just URL strings without fetching the content explicitly. Our technique is composed of mining the crawl logs and utilizing clusters of similar pages to extract transformation rules, which are used to normalize URLs belonging to each cluster. Preserving each mined rule for de-duplication is not efficient due to the large number of such rules. We present a machine learning technique to generalize the set of rules, which reduces the resource footprint to be usable at web-scale. The rule extraction techniques are robust against web-site specific URL conventions. It compares the precision and scalability of our approach with recent efforts in using URLs for de-duplication. Supervised crawler is on efficient and large-scale deduplication of documents on the WWW.

Web pages which have the same content but are referenced by different URLs are known to cause a host of problems. Crawler resources are wasted in fetching duplicate pages, indexing requires larger storage and relevance of results are diluted for a query. The presented techniques to scale pair-wise Rule generation and introduced a decision tree based Rule generalization algorithm. In this research we build on that work by extending the URL and Rule representations and introduce algorithm for finding host specific delimiters. Together these set of techniques form a robust method for de-duplication of web pages using URL strings. While the URL and Rule representation is complete and covers most patterns, we consider two additional patterns due to their significance on the Web: Deep Token components in a URL and URL component alignment. Propose a technique for extracting host specific delimiters and tokens from URLs. We extend the pair wise Rule generation to perform source and target URL selection. And also introduce a machine learning

based generalization technique for better precision of Rules. Collectively, these techniques form a robust solution to the de-duplication problem.

Another related work is near-duplicate detection. Forum crawling also needs to remove duplicates. But content based duplicate detection [6], [9] is not bandwidth efficient, because it can only be carried out when pages have been downloaded. URL-based duplicate detection [4], [7] is not helpful. It tries to mine rules of different URLs with similar text. However, such methods still need to analyze logs from sites or results of a previous crawl. In forums, index URLs, thread URLs, and page-flipping URLs have specific URL patterns. Thus, in this paper, by learning patterns of index URLs, thread URLs, and page-flipping URLs and adopting a simple URL string de-duplication technique (e.g., a string hash set), FoCUS can avoid duplicates without duplicate detection.

### III. SUPPORT VECTOR MACHINE

Support vector square measure used for supervised learning in machine learning related to learning algorithms that analyze knowledge and acknowledge patterns used for classification and regression analysis. Given a group of coaching examples, every marked as happiness to one of two classes, Associate in Nursing SVM coaching formula builds a model that assigns new examples in to 1 class or alternative. Associate in Nursing SVM model is that the illustration of the examples as points in house, mapped so example of the separate classes square measure divided by a transparent gap that as wide as possible. New examples square measure mapped in to it some house and foretold to belong to a class based mostly on the that facet they fall on.

Mapping the high dimensional data in linear kernel support vector machine is not possible because of large dataset so RBF(Radial Basis Function) is used to measure the similarities between the two examples. It is also called as Gaussian kernel. The Gaussian kernel should be calculated by

$$K(\mathbf{x}_i, \mathbf{x}_j) = \exp\left(-\frac{\|\mathbf{x}_i - \mathbf{x}_j\|^2}{2\sigma^2}\right)$$

Choice of kernel: Gaussian or polynomial kernel is default; if ineffective, more elaborate kernels are needed domain experts can give assistance in formulating appropriate similarity measures

Choice of kernel parameters

- e.g.  $\sigma$  in Gaussian kernel
- $\sigma$  is the distance between closest points with different classifications

### IV. MULTI KEYWORD WEB CRAWLING

The existing system of this work deals with the removal of duplicate and unwanted pages from the forum crawling and the classifier support vector machine correctly classifies the URLs to achieve the highest performance for effectiveness and coverage. Compared to variety of crawlers it achieves the better performance and it also works with the question and answer forum sites and this system proposes the method by using the ontology. By using the multi keyword search under the specific domain to provide a better achievement.

#### 4.1 Creating Ontology

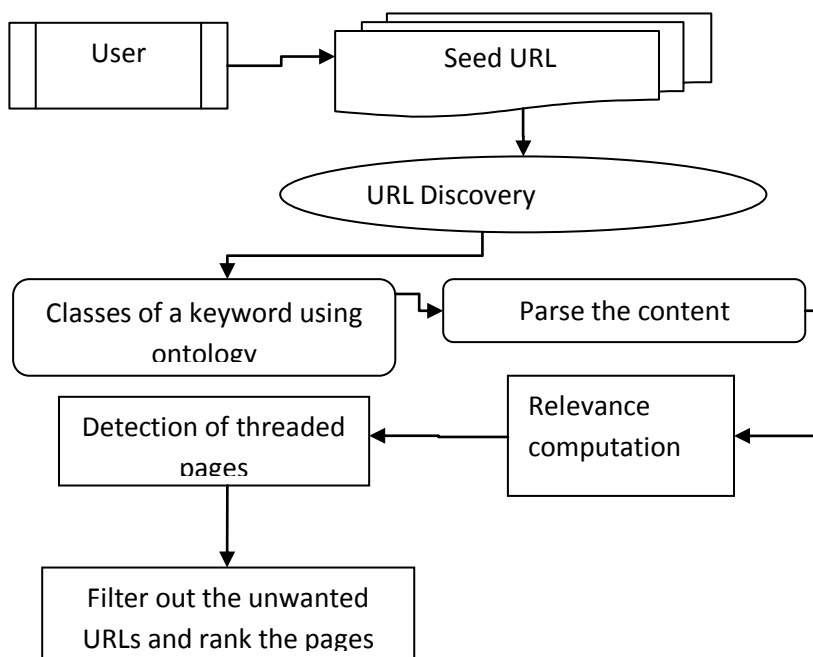
Ontology is the philosophical study of nature of being, becoming, existence or reality basic categories of being and their relations. It deals with questions what entities should exist and how much entities can be grouped related to this hierarchy and sub divided according to similarities and differences. If that keyword matches to

some features like super script, subscript, some related matching patterns then identify the correct page to retrieved

#### 4.2 Protégé Tool

Protégé is a free, open source ontology editor and framework for the collection of knowledge and it can be exported in to variety of forms like OWL and XML Schema, it is flexible for rapid prototyping and application development. OWL which contains the description of classes, properties and their instances etc. Based on that the relevant information should be collected by using protégé to develop an ontology and this should accessed by using the multi keyword crawling.

#### 4.3 System Overview



**Figure 1: Multi keyword web crawling**

User seeds the URL to identify the entry URL discovery by using the entry URL discovery algorithm. The keyword matches with their class label for the relevant content to retrieve by using hierarchical structure. Parse the content and performing the relevance computation for identifying the relevant pages to match with the keyword to another class label to retrieve the data and remove the irrelevant URLs. And rank the pages for retrieving the highest rank page match with keyword for user query.

#### V. EXPECTED RESULT

The standard URLs have been downloaded for the analysis of the project. The expected results of the project will the keyword should match with correct page to retrieve the content. RBF kernel SVM used to retrieve the high dimensionality data in large text data set.

#### VI. CONCLUSION

In this project, Ontology helps the crawler to extract and aggregate information from a specific domain. Using this method, matching feature between the keywords to identify the specific data for a specific domain. In the existing system the data can be retrieved from all the crawlers. According to the study on existing methods in previous papers of literature the downloaded pages can be retrieved this can be classified by using linear kernel

SVM. But in this proposed method RBF kernel SVM can be used to perform high dimensionality large text data set. Using this technique the data can be retrieved based on the keyword matching.

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