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# A Survey On Facilitating Document Annotation Using Content And Querying Value

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**Abstract – A bulk data is generated in different organization which is in textual format. In such text structured information is get shadowed in unstructured text. Current algorithms working on constructing information from raw data , but they are not cost effective and sometimes shows impure result set especially when they are working on text with lacking of knowledge about exact arrangement of text data. We proposed two new technique that facilitates the generation of structured metadata by identifying documents that are likely to contain information of user interest and this information is going to be useful for querying the database find exact information/document. Here people will likely to assign metadata related to documents which they upload which will easily help the users in retrieving the documents. Our approach relies on the idea that humans are more likely to add the necessary metadata while creating any document, if prompted by the interface; or that it is much easier for humans (and/or algorithms) to identify the metadata when such information actually exists in the document, instead of naively prompting users to fill in forms with information that is not available in the document. As a part of the system major modules discover structured attributes and interesting knowledge or features about the document , by using 2 techniques jointly utilizing the**

**a. Content of the text and the**
**b. Query**

**Such algorithms fetching knowledge out of raw data are considering words and their frequency count but not the phrases or typical sequence of words. As a part of our contribution we introduce a technique i.e. phrase extraction. This technique extract typical sequence of words to construct knowledge from raw data.**

**Keywords: Bulk data, Query, Information, Metadata, Structured.**

## I. INTRODUCTION

Summarized output on searching particular document is prime requirement nowadays. To get such summarized search output , we have to maintain documents / data in smart way. Annotation technique is one of the best featured technique to manage such documents and get effective search result. Attribute – value pairs are generally more meaningful and significant as they can contain more information than un-typed approaches. Efforts to keep such decent maintenance of such annotate documents user has to take extra efforts.

A scenario is cumbersome, complicated and tedious where there are number of fields to be filled at time of uploading a particular document. Hence end user frequently ignoring such annotation capabilities. User is still unresponsive and ignoring task though system offers the facility to randomly annotate the data with attribute-value pairs. Along with this there it also has unclear usefulness for subsequent searches in the future. Such difficulties finally tend to very basic annotations, if any at all, that are often limited to simple keywords. Such simple annotations make the analysis and querying of the data cumbersome. It's the fact that this effective but ignored attribute – value paired annotation scheme can bring smooth searching and maintenance and this motivated us to work on Collaborative Adaptive Data Sharing platform (CADS), which is an "annotate-as-you create" infrastructure that facilitates fielded data annotation. The contribution of our system is the direct use of the query workload to direct the annotation process, in addition to checking the content of the document. Along with this contribution we are also working on phrase extraction process to build knowledge out of text. CAD provides cost effective and good solution to help efficient search result. The goal of CADS is to support a process that creates nicely annotated documents that can be immediately useful for commonly issued semi-structured queries of end user.

## II. RELATED WORK

S.R. Jeffery, M.J. Franklin, and A.Y. Halevy proposed a paper Pay-as-You-Go User Feedback for Dataspace Systems

This system propose a system which is a line of work towards using more expressive queries that leverage annotations is the "pay-as – you – go " querying strategy in data spaces. In data spaces users provide data integration hints at querying time. But in this paper it is assumed that data sources already contain structured information and the problem is to match the query attributes with the source attribute.

K. Saleem, S. Luis, Y. Deng, S.-C. Chen, V. Hristidis, and T. Li : proposed a paper "Towards a Business Continuity Information Network for Rapid Disaster Recovery In this paper they consider the Crisis Management and Disaster Recovery have gained immense importance in the wake of recent man and nature inflicted calamities. They proposed a solution or model for pre-disaster preparation and post-disaster business continuity/rapid recovery. In case of disaster need of rapid information retrieval and sharing increases. This paper proposed a disaster management model which works good at some extent but it is not considering the effective retrieval.

R.T. Clemen and R.L. Winkler : proposed a paper "Unanimity and Compromise among Probability Forecasters" In this paper they work on probabilities of

particular uncertain event. This helps us to find out annotation and attributes.

M. Franklin, A. Halevy, and D. Maier : proposed a paper "From Databases to Dataspaces: A New Abstraction for Information Management ".It proposed a solution to Laplace smoothing to avoid zero probabilities for the attributes that do not appear in the workload. It helps us to converge towards accuracy.

G. Tsoumakas and I. Vlahavas : propose a paper Random K-Labelsets: An Ensemble Method for Multilabel Classification.

This paper proposes an ensemble method for multilabel classification. The RAndom k-labELsets (RAKEL) algorithm constructs each member of the ensemble by considering a small random subset of labels and learning a single-label classifier for the prediction of each element in the power set of this subset. In this way, the proposed algorithm aims to take into account label correlations using single-label classifiers that are applied on subtasks with manageable number of labels and adequate number of examples per label. Using this we can take into account the correlation between tags for annotations. But in this collaborative annotation is missing.

P. Heymann, D. Ramage, and H. Garcia-Molina : proposed a paper "Social Tag Prediction".This paper give solution for prediction of tags for particular object. We can adopt this for out suggesting annotation concept.

Y. Song, Z. Zhuang, H. Li, Q. Zhao, J. Li, W.-C. Lee, and C.L. Giles : proposed a paper "Real-Time Automatic Tag Recommendation". This exactly work with the same way we want for out document annotations.

J.M. Ponte and W.B. Croft : proposed a paper "A Language Modeling Approach to Information Retrieval". In this paper They consider this information retrieval scenario and proposed a solution to analyze the content. They proposed a approach to retrieval based on probabilistic language modeling. Their approach to modeling was non-parametric and integrates document indexing and document retrieval into a single model. But in this making prior assumptions about the similarity of document is not warrented.

D. Eck, P. Lamere, T. Bertin-Mahieux, and S. Green : proposed a paper "Automatic Generation of Social Tags for Music Recommendation. This This paper promotes same kind of auto suggestions of tags. But this is dedicated to the musical data. We are using text based documents.

B. Sigurbjornsson and R. van Zwol : proposed a paper "Flickr Tag Recommendation Based on Collective Knowledge". This system works for Flickr and it suggest tags for images / snapshots on flickr. It guides us for web based system structure tag recommendations.

A. Jain and P.G. Ipeirotis, propose a paper "A Quality-Aware Optimizer for Information Extraction," This paper presents Receiver Operating Characteristic (ROC) curves to calculate the extraction quality and selection of extration paramenter.

Automated information extraction (IE) algorithms used to extract targeted relations or characteristic of the document.In this case we should process only documents that actually contain such information.when we process documents that do not matched with the predefined targeted information and we use automated information extraction algorithms to extract such annotation. we often face a significant number of wrong positives results, which may lead to significant quality problem in the data annotation

S.-T. Wu, Y. Li, Y. Xu, B. Pham, and P. Chen, propose a paper "Automatic Pattern-Taxonomy Extraction for Web Mining,"and "Deploying Approaches for Pattern Refinement in Text Mining," In these papers a technique of closed sequential patterns is used in text mining. It contains the concept of closed patterns in text mining. It improves the performance of text mining. Pattern taxonomy model is developed to improve the effectiveness. It uses closed patterns in text mining effectively.term-based methods and pattern based methods is used to improve the performance of information filtering.

D. Yin, Z. Xue, L. Hong, and B.D. Davison, "A Probabilistic Model for Personalized Tag Prediction," These paper suggest social tagging by incremental process. It proposes Probabilistic models. Probabilistic tag recommendation systems is introduced . It uses Bayesian approach. It only focusing on content and not the query workload that reflects the user interest.

B. Russell, A. Torralba, K. Murphy, and W. Freeman : propose a paper "LabelMe: A Database and Web-Based Tool for Image Annotation". A tag prediction for images is proposed in this paper. I proposes web-based tool for easy image annotation and instant sharing of annotations. It detect the objects and find similarity with existing dataset. It helps for image search in web.

K. Chen, H. Chen, N. Conway, J.M. Hellerstein, and T.S. Parikh, propose a paper "Usher: Improving Data Quality with Dynamic Forms,". In USHER focuses on system for form design, data entry and data quality assurance. Using existing data set of form, USHER derives a probabilistic model using the questions of the form. It is closely related to CAD form in our system. Using Usher we can identify dependencies across attributes.

M. Jayapandian and H.V. Jagadish, propose a paper "Automated Creation of a Forms-Based Database Query Interface,"and "Expressive Query Specification through Form Customization," CADS - is an adaptive query form. A technique to extract query forms form existing queries in a dataset that are fires on database using 'querability' of column. In [21]form customization technique is proposed. In this keyword is used to select query form. In our technique we create schema and contents using data in document as well as query workload.

M. Miah, G. Das, V. Hristidis, and H. Mannila propose a paper "Standing out in a Crowd: Selecting Attributes for Maximum Visibility," This paper presents extract algorithm based on Integer Programming formulation of the problem. It takes significant amount of time for processing for small workload but provide optimal and nearest solution.

## III. PROPOSED SYSTEM

CAD's basic objective is to create very structured annotated document to trigger efficient search in minimal execution cost. Also for semi-structured queries of user CAD generate most useful output. Also CAD adopt the strategy in which

document is annotate at time of creation while crater is still in "document generation" phase, even though the techniques can also be used for post-generation document annotation.

In our scenario, the author generates a new document and uploads it to the repository. After the upload, CADS analyzes the text and creates an adaptive insertion form. The form contains the best attribute names given the document text and the information need (query workload), and the most probable attribute values given the document text. The author (creator) can inspect the form, modify the generated metadata as necessary, and submit the annotated document for storage.

Our efforts focus not only on identifying the potential annotations fields that exist in complete and optimal annotations for document , but also to rank them and display on top the most important ones. Since the goal of annotations is to facilitate future querying, we want the annotation effort to focus on generating annotations useful for the queries in the query workload.

**Flow of the proposed system :**

1. User first select the document to upload it on the server. Before uploading the actual document our system analyze the document and get informative data from it.
2. To get data in annotation form in key and value pair.
3. To analyze the data we first use STOP word method.
4. After STOP word we use STEMMER method to filter data
5. After this we calculate the frequency count.
6. Then we apply Bayes algorithm to suggest annotations from filtered data.
7. After this we generate a CAD form (Collaborative Adaptive Data) which is having annotations suggested by the system. Along with the system suggestions user can add his own annotations for particular document before uploading. These annotations help us to find same document when we search it.
8. While searching , users fire some queries , these search queries are registered by our system and feed to Bernaulli Algorithm to querying value analysis. Later result of Bernaulli's algorithm is also used to suggest annotations
9. We contribute pattern mining here.Which helps us to analyze the content of document and search particular pattern from it and suggest that pattern as an annotation.

## IV. CONCLUSION

Our system provides solution to annotate the document at time of uploading and also works on user's querying needs. Our proposed architecture works on the content of document and also analyze the user queries. User queries and document content are the two basic source to generate the annotation. Along with annotation document pattern mining is the technique that helps the user to map document with frequent pattern and use pattern at the time of searching. The annotation and pattern matching technique provides flexible and complete solution for document tagging and searching.

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