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DOORSTEP AGRICULTURAL INFORMATION FOR FARMERS

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ABSTRACT: The main aim of this project is to provide Agricultural Information to the farmers that can be operated on their mobile phones from different Ontology repository. The amount of RDF data available on the web has been increasing. Hence web applications built to achieve RDF data cannot depend on a fixed and complete schema but, in general, must assume the data to be semi-structured. The Web Ontology Language OWL is a language for defining and representing Web ontologies. OWL ontology may include characteristics of classes, properties and their instances. The purpose of OWL Web Ontology Language is to provide a language that can be used to depict the classes and relations between them that are inherent in Web documents and applications.

Index Terms**:** Ontology repository, real-time performance, semantic search**.**

I. INTRODUCTION

Existing cloud storage systems cannot provide enough capability for the semantic queries. Since the worth of data depends on efficiency of semantic search, large fractions of data values being lost or significantly due to the data staleness. Existing tools not only cause high costs and complexity, but also fail to handle large amounts of files. Data accessed from large datasets will be slow in existing approaches. High resource costs are the severe performance bottleneck. In some cases, the results of analysis on stale data can even be leading to potential fatal faults. A large dataset is proposed to store Ontology-based repositories; querying semantic data will be fast. In order to reduce operation cost and improve query efficiency in smart phones, reduction of the redundant data such as identifying and filtering at the client side is done. Data is transformed into ontology-based repositories like Web Ontology Language (OWL) and Resource Description Framework (RDF). OWL adds more glossary for describing properties and classes. Retrieving data from ontology-based repositories done using SPARQL (Simple Protocol and RDF Query Language).

II. SURVEY DETAILS

RDF Methodology

The Resource Description Framework (RDF) is built for semantic data containing Structured as well as unstructured data on a Relational Database. The RDF is provided by mining the text contents uploaded by the users in internet and the contents of the files are analyzed and the Meta contents are manipulated. Similar data's that relate to the same resource are grouped together in RDF. Master RDF data is formed by grouping multiple RDF's and then structured together. It holds all the semantic information's of a server which supports query processing. The Query processing is handled in the RDF file by iteration of the triples. A triple is in the

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form of subject–predicate–object expressions in RDF terminology. The subject represents the resource, and the predicate represents aspects of the resource and tells the relationship between the subject and the object. For example, one way to represent the notion "The blood has the red color" in RDF is as the triple: subject denotes "the blood", predicate denotes "has", and object denotes "red color". Therefore, RDF swaps object for subject of an entity–attribute–value model within object-oriented design; Entity (blood), attribute (color) and value (red). RDF contains several file formats and hence the way in which a resource or triple is encoded varies from format to format. This process of describing resources in the W3C's (World Wide Web) Semantic Web activity enable the users to deal with the information with higher efficiency and certainty. RDF's simple data model also led to its

larger use in knowledge management applications not related to Semantic Web activity. RDF-based data model is more naturally suited to knowledge representation than the relational model and other ontological models. RDF graphs are expressed using ShEX, or Shape Expressions. One can build additional ontology languages upon RDF.

OWL Methodology

The **Web Ontology Language** (**OWL**) is used for authoring ontologies. Ontologies are a formal way to depict taxonomies and classification networks for various domains: the nouns representing object classes and the verbs representing relations between the objects. Ontology is similar to class hierarchies in object-oriented programming. Class hierarchies are meant to represent structures used in source code whereas Ontologies are meant to represent information on the Internet. Similarly, ontologies are typically more flexible as they represent information on the Internet that has been coming from all sorts of heterogeneous data sources. The OWL languages are characterized by formal semantics. They are built upon Resource Description Framework (RDF). RDF is called as W3C XML standard for objects. OWL and RDF have important use in academic, medical and commercial interest.

III. EXISTING SYSTEM

Existing cloud storage systems fails to offer sufficient capability for the semantic queries. Since the worth of data depends on the efficiency of semantic search that can be carried out on the data in (near-) real-time, large amount of data values being lost due to the data staleness. Existing content-based analysis tools not only cause high costs and complexity, but also fail to handle the large amounts of files. Data accessed from large datasets will be slow while querying semantic data in existing approaches. High resource costs are the severe performance bottleneck frequently caused by query operations. In some cases, the results of data analytics on stale data can even be deceptive, leading to potential fatal faults. FAST methodology is used for semantic analysis and search process.

IV. PROPOSED SYSTEM

This paper proposes semantic queries based implementation in order to improve query efficiency and reduce operation cost in smart phones. Thus, the need to reduce the redundant data such as identifying and filtering redundant data at the client side is necessary. Data is transformed into ontology-based repositories like Web Ontology Language (OWL) and Resource Description Framework (RDF). Large dataset will be stored in Ontology-based

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repositories; querying semantic data will be fast. I also develop a mobile based application which guides a farmer from planting to harvesting in a timely manner. Recommendations for planting based on soil conditions and guidelines for plant growth and current market status regarding the particular crop is also investigated and intimated to the farmers. Retrieval of data from ontology-based repositories is done using SPARQL (Simple Protocol and RDF Query Language). OWL facilitates machine interpretability of Web content that are supported by XML, RDF, and RDF Schema (RDF-S) by providing additional glossary along with a formal semantics.

1. Plants Ontology

The farmer has to register details. The server in turn stores the farmer information in its database. Farmer enters soil test value (N, P, K) to the server, now soil test value checks in Soil ontology. Each N, P, K value checks in each data type attribute in Ontology. Plants will be recommended to the farmer by the following strategy: Exact or above N, P, K (Nitrogen, Phosphorous, Potassium respectively) values are checked with data type attribute in Soil Ontology, if both matches, relevant plants will be recommended first. Next one or two N, P, K values, if matches found then relevant plants will be recommended. Farmer Information saved as an individual in Farmer Ontology.

2. Pest Ontology and Weather Report

Farmer uploads a pest image to the server. The server checks in Pest Ontology to retrieve the solution of an uploaded pest image. Everyday system monitors weather report of the farmer district from phone db and stores weather information in database. When the farmer login, past 3 days weather status informed to the farmer. If farmer request weather report and server provides solution from Weather Ontology.

3. Fertilizer Mixing and Marketing

Farmer request fertilizer mix for plants to Server by giving the input as acre, plants, reason. Server checks in Soil Ontology and retrieve N, P, K values of the plant. Then check in Farmer Ontology and retrieve farmer plants N, P, K values. By comparing both values and also checks the reason (Growth, pests), server provides fertilizer mixing for plants. Admin maintains price details of vegetables and fruits. Farmer request price and marketing information of plants, server provides solution from Marketing Ontology.

4. Semantic Search

The Resource Description Framework (RDF) is constructed for semantic data containing Structured as well as unstructured data on a Relational Database. The RDF is provided by mining the text contents uploaded by the
users in internet and the contents of the file are analyzed and the Meta contents are manipulated. Similar data's that relate to the same resource are grouped together in RDF. Master RDF data is formed by grouping multiple RDF's and then structured together. It holds all the semantic information's of a Server which supports query processing. The Query processing is handled in the RDF file by iteration of the triples. A triple is in the form of subject–predicate–object expressions in RDF terminology. Similar data's are grouped

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together that relate to the same resource. Different resources are grouped together by relating the predicates in the triples.

V. ARCHITECTURE DIAGRAM

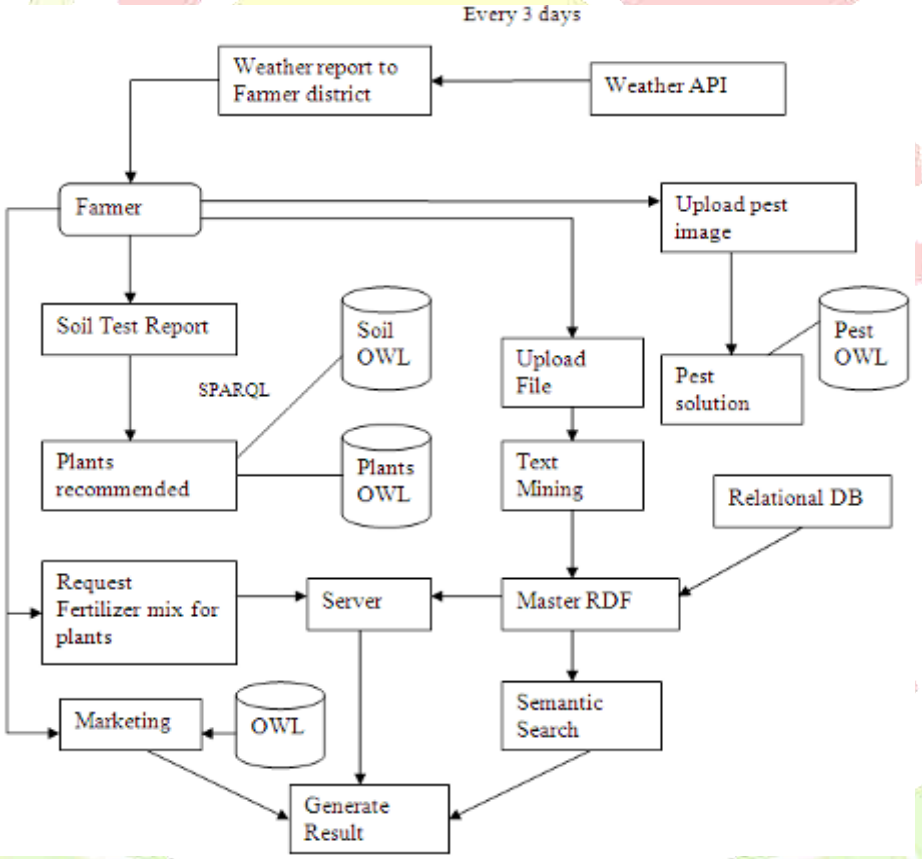

Fig 1. Architecture Diagram

VI. RESULTS

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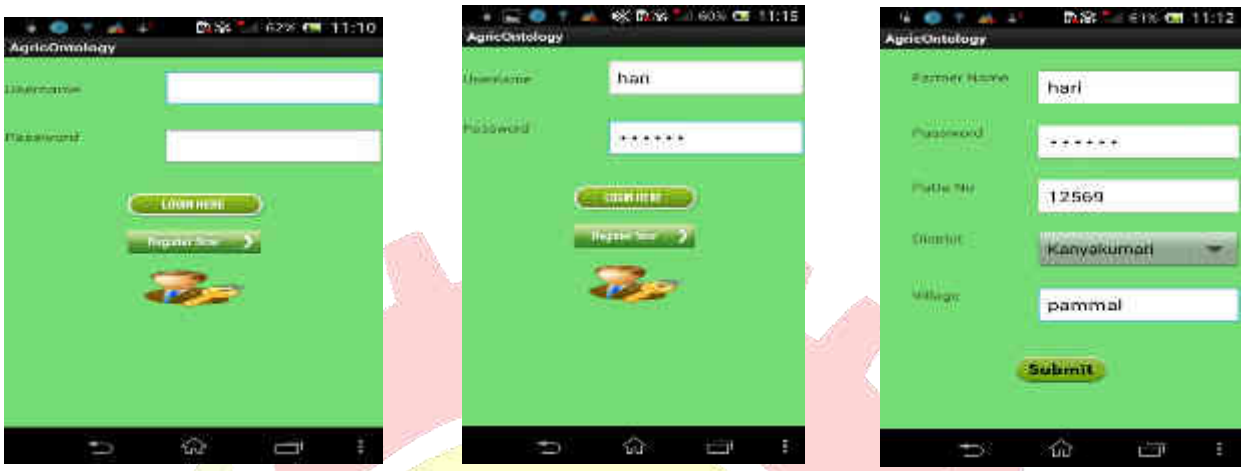

Fig 2. Login

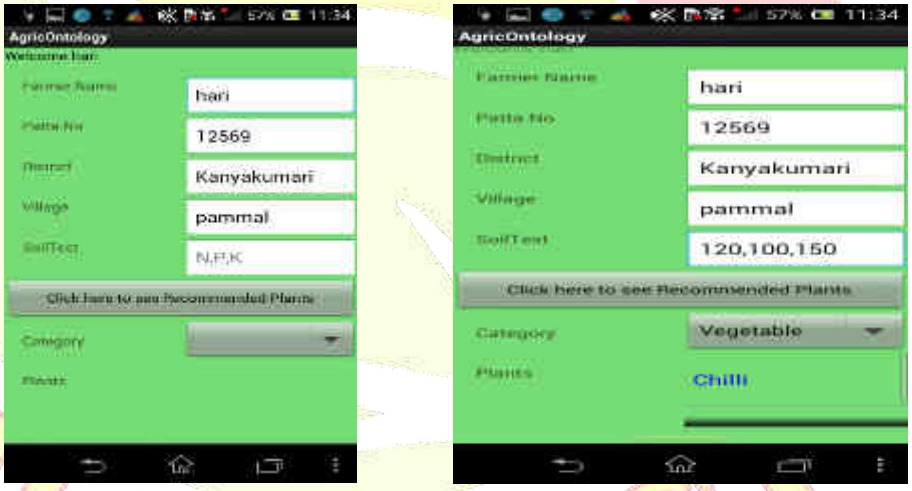

Fig 3. Customer Details

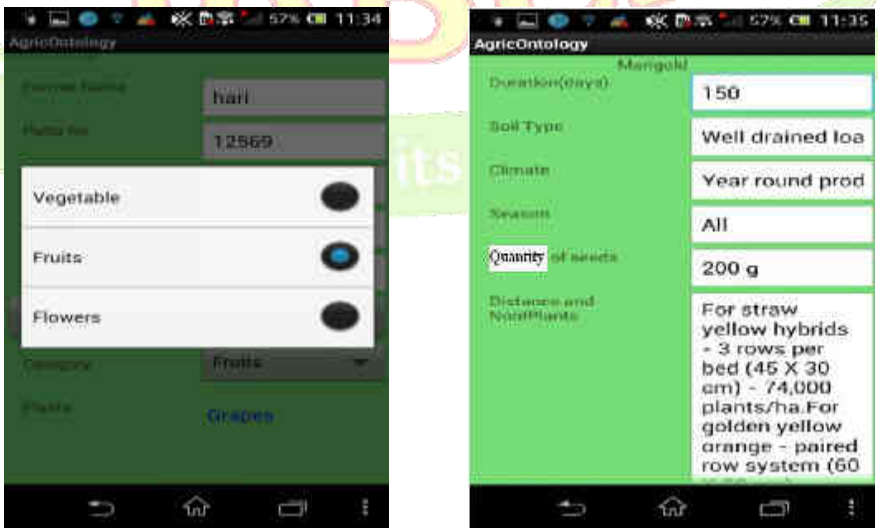

Fig 4. Plant Details

VII. CONCLUSION

This paper proposes semantic queries based method in order to improve query efficiency and reduce operation cost in smart phones. Thus, the need to reduce the redundant data such as identifying and filtering redundant data at the client side is necessary. Data is transformed into ontology-based repositories like Web Ontology Language (OWL) and Resource Description Framework (RDF).

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