STRONG COMPONENT BASED STATISTICAL MANAGEMENT

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ABSTRACT

Current trend for the building the ontology based data management system (DMS) is to the capitalized on determinations made to design the previous well established DMS the reference system. Method amounts to the extracting from reference DMS the piece of the schema relevant to new application needs the module as possibly personalizing it by the extra constrain application under the construction and then managing the dataset using resulting the schema. In this scenario we can extend existing definitions of the modules and we introduced the novel properties of the robustness that provide means for the checking easily that the robust module depend DMS evolves safely. Both schema and data of reference the DMS. We carryout our investigations in setting of the description logics which underlie modern ontology languages similar RDFS, OWL and OWL2 from the W3C. However we focus on DL lite A dialect of DL-lite family which is encompasses foundations of QL profile of the OWL2 (i.e. DL-liteR); the W3C recommendation for the efficiently managing huge datasets.

Index Terms— The H.1 Models And Principles And H.2 Database Management And H.2.8.K Personalization And I.1.2.B Algorithms For Data And Knowledge Management And I.2 Artificial Intelligence Or I.2.12 Intelligent Web Services And Semantic Web

I. INTRODUCTION

In more application domains medicine or biology comprehensive schemas resulting from the collaborative initiatives are made available. For instance SNOMED is the ontological schema containing greater than 400.000concept names covering many areas such as the anatomy diseases medication and even geographic locations. Such as well-established schemas are often associated with reliable data that have been carefully collected cleansed and verified so providing reference ontology depends on data management systems (DMSs) in various application domains. The good practice is therefore to build on efforts made to design reference DMSs whenever we have to develop our own DMS with the specific needs. The way to-do this is to extract from reference DMS piece of the schema relevant to our application needs possibly to personalize it with extra constraints. our application under construction and then to manage our own dataset using resulting schema. Current researching description logics DLs provides different solution to achieve such the reuse of the reference ontology depend DMS. Indeed modern ontological languages like W3C (WWW) recommendations RDFS, OW Land OWL are actually XML depend syntactic variants of well-known DLs. All those solution consist in the extracting module from existing ontological schema such that each and every constraint concerning relations of the interest for the application under construction are captured in module. Existing definitions of modules in the literature basically resort to the notion of(deductive) conservative extension of a schema or of uniform interpolant of the schema a.k.a. The forgetting about is non-interesting relations of the schemas. Formalizes those two notions for schemas written in DL's and discuss their connections. The conservative extension hasbeen considered for defining module as subset of schema. In contrast forgetting has been considered for the defining the module as only logically implied by the schema(by definition of forgetting can't lead to the subset of the schema in general case). Together kinds of the modules have been investigated in the various DLs, f.e DL-lite EL and ALC.

II. ILLUSTRATIVE EXAMPLE

Consider the reference DMS for scientific publications like as DBLP defined by ontological schema O and dataset D. The schema O is built upon unary relations Publication, Configure Paper, Short Paper, Full Paper, Journal Paper, Survey, and the binary relations has Title, has Date, has Venue, and has Author. It is consists of inclusion constraint and of the integrity constraints. These constraints are written using DL-lite in which ∃r denotes the usual relational projection on first attribute of binary relation r and (function r) denotes the functional dependency from the first attribute of the binary relation r to the second one. The constraints in O state that any publication has a single title the single date of publication a single venue and at least one author. The dataset D consists of the instances for relations in O. It is expressed as the relational tables.

2.1 Designing a Module-Based DMS

Assume that we have to develop the DMS about the scientific publications e.g. for the company or the university. Whether we are interested in the managing journal papers and their authors only we can extract the module from O w.r.t. relations of the interest Journal Paper and has Author. A possible moduleO0consists of the constraint Journal Paper v ∃has Author. Assume that now person in the charge of populating this module depend DMS stores by the mistake doi1 in local Journal Paper table and its authors 'SA' and 'OD'.

2.2 The Global Consistency

Illustration: It is easy to see that though our module based DMS is consistent it is inconsistent together with reference DMS: doi1 is the journal paper in our DMS while it is the conference paper in reference DMS. This is violates constraint of reference schema. Detecting this kind of the inconsistency known as the global in consistency this is important whenever it indicates that some of our data contradicts reference DMS and soit is probably erroneous. Our basic idea is therefore to use all reference DMS schema and data as the extra constraints to be satisfied by the module based DMS. Of course we do not want to import whole reference DMS into our own DMS in order to do this. Instead we extend notion of module to the robustness to the consistency checking so that global consistency checking can be performed on demand or upon update. We ensure that the module captures constraints in reference schema that are required to detect inconsistency related to relations of interest. After the global consistency checking time those constraints are verified against distributed dataset consisting of the dataset of module depend DMS plus that of reference DMS.

2.3 Global Answers: Illustration

Assume that the DMS can answer conjunctive queries (select project join querie) for example Q(x):- Journ Paper(x) and has Author(x, 'AH') asking for journal papers developed by Alon Y. Halevy. In some cases it is the interesting to provide answers from our DMS together with reference one is known as global answers typically when our own DMS not provide or too few answer. To do so we extend the notion of module to the robustness to query answering such that global query answering can be performed on demand. We ensure that module captures knowledge in reference schema that is required to answer any query built upon relations of the interest. After that the global query answering this time knowledge is used to identify the relevant data for given query within a distributed dataset consisting of the dataset of module depends on DMS plus that of reference DMS.

2.4 The Safe Personalization: Illustration

Assume that the (possibly robust) module don't meet complete constraint for our application beneath development. The personalization step which amounts to adding appropriate constraints are thus necessary. However it requisite carefully complete after all personalizing can be lead to lose the global data management skills (i.e., the robustness) or even the reality of notion of the module. To prevent this we exhibit sufficient the conditions for the safe personalization.

2.5 The Reducing Data Storage: Illustration

Robust based module DMS's offer the interesting peculiarityw.r.t. the data storage. Absolutely the global data managements performed on the dataset that is the distributed betwixt module based DMS and a reference. Consciously the redundancy can occur in distributed dataset when some equivalent instances of relations of the interest are couple stored in module based DMS and storedexplicitlyor implicitly in the reference DMS. Accordingly the way of the reducing data storage in the robust module based DMS is to store only the data that aren't already anyhow stored in reference DMS. This can be easily checked by asking the queries to this DMS

III. DL-LITE DATA MODEL

Generally the speaking in DL's the schema is known as the$T_{box}$and it is associated dataset is known asA_{box}.T_{box} T is defined upon signature which is disjoint union of the set of the unary relations known as atomic concepts and the set of the binary relation called atomic roles. It subsist of theset of constraints known terminological axioms typically inclusion constraints betwixt complex concept or role i.e., the unary or the binary DL formulae built upon atomic relations using the constructor allowed in DL under consideration.The Abox defined upon sig (T) is the set of the facts known as assertion axioms, relating DL formulae to their instances. The knowledge base $(KB)\ K = (TA) A_i$ is made of a T_{BOX} T and an A_{BOX} A. The legal KB's vary according to DL used to express terminological and assertion axioms and to restrictions imposed on those axioms.

IV. ALGORITHMS BEING ROBUST MODULE ESTABLISHEDDATA MANAGEMENT

4.1 Extracting Robust Modules

The ERM algorithm for the extracting robust modules from the given DL lite T_{box} (Algorithm) relies on notion of (deductive) closure of a T_{box}

Algorithm: the ERM algorithm ERM (T, Γ, RQA, RCC) Input: a DL-liteT_{box} T, a signature Γ ⊆ sig(T) two booleans RQA and RCC

Output: The module T_Γ of T w.r.t. Γ, which is semantically minimal robust to the query answering if RQA = true, and robust to the consistency checking if RCC = true

(1) $T_\Gamma \leftarrow \emptyset$

(2) $Foreach\ \alpha \in cl(T)$

(3) Ifα is built upon Γ only

(4) $T_\Gamma \leftarrow T_\Gamma \cup \{\alpha\}$

(5) Else if $RCC = true$ and $\alpha\ is\ a\ NI\ X \vee \neg Y$ s.t. X or

Y is built upon Γ

(6)$T_\Gamma \leftarrow T_\Gamma \cup \{\alpha\}$

(7) If $RQA = true$

(8) $Sig \leftarrow \Gamma; T'_\Gamma \leftarrow \emptyset$

(9) While $T_\Gamma \neq T'_\Gamma$

(10) $T'_\Gamma \leftarrow T_\Gamma sig' \leftarrow$ sig

(11) $Foreach\ PI\ X \vee Y \in T$s.t. Y is built upon sig'

(12) $T_\Gamma \leftarrow T_\Gamma \cup \{X \vee Y\}$

(13) $sig \leftarrow sig \cup sig_X$

(14) returnT_Γ

4.2 Checking Safe Personalization of a Module

Algorithm 2: The SPC algorithm

SPC(T0, T_Γ, T , RQA, RCC)

Input: a T_{box}T 0 that is a personalization of the module

$T_\Gamma$of a T_{box} T w.r.t. Γ ⊆ sig(T), and two boolean RQA

And RCC denoting respectively whether T_Γ is robust to

Query answer & the texture checking Output: true whether $T'$is safe false otherwise

(1) Ifsig(T) ∩ (sig(T')\sig(T_Γ)) ≠∅

(2) Return false

(3) if cl(T) ≠ERM(T ∪(T',sig(T), false, false)

(4) Return false

(5) Ifcl(ERM(T ∪(T',sig((T')\sig+(T_Γ), RQA, RCC)) ≠cl((T')

(6) return false

(7) return true

4.3 Computing Minimal Modules by Reduction

As mentioned in Section 4, minimal modules play an

Important role for the efficiency of practical module based Data management: Definition 12 (T_{box} Reduction) The reduction of TheT_{box}T denoted red(T) is obtained by the starting from $red(T) = T$after applying exhaustively following rule until no many constraint can be removed from the red(T); If $\alpha \in red(T)$ and red$(T)\backslash\{\alpha\} \models \alpha$ then; remove α from red(T).

The following theorem characterizes main properties of reduction of T_{box}.

Theorem, let T beT_{box}.

1) Computing red(T) is the polynomial in size ofsig (T).

2) T and red(T) are the equivalent.

3) Any strict subset of the red(T) is not equivalent to T.

V. EXISTING SYSTEM

In the existing system current trend for the building an ontology based data management system (DMS) is to capitalize on effort made to design the pre-existing well established DMS. Method amount to extracting from reference DMS the piece of schema relevant to new application needs the module possible personalizing with w.r.t the application under construction and then managing the dataset the resulting schema.

Problem on existing system

This is method Not maintain by Easy.

VI. PROPOSED SYSTEM

In propose system we extend the existing definition of modules and we introduce novel properties of the robustness that provide means for checking easily that a robust module based DMS evolves safely Both the schema and the data of the reference DMS. We carry out the investigation in the setting of the description logistic which underlies modern ontology language like RDFS, OWL and OWL2 from W3C notably we focus on the DL-liteA dialect of the D:-lite family which encompasses the foundations of the QL profile of OWL2 the W3c recommendation for efficiently managing large datasets.

Advantages:

1) This is very useful to maintain the Data.

2) Search and retrieve data are simple.

VII. CONCLUTION

In this scenario we generalize both the modules obtained by the extracting subset ofT_{box} in addition in the contrast with existing work we have considered problem of safe personalization of modules built from existing reference the DMS. This is raisesnew issues to check usually that module place on DMSevolves independently however the coherently w.r.t. The references are DMS from which it has built. In this we introduced two notion of module robustness that compose possible to the build locally relevant queries to ask to the reference database in order to check global consistency and to obtain global answers for local queries. We have provided the polynomial time algorithms that extract minimal and robust modules from reference ontological schema expressed as DL-lite T_{box}. Extract module from DL- lite schemas following forgetting approach. It proposes alternative to our result about global query answering which applies under severe constraint are that dataset ofthe reference DMS has to be modified write access are required. Compared to algorithm developed byfor the extracting modules from the acyclic EL ontological schema sour approach handles possibly cyclic DL-lite a schemas while keeping the data consistency and the query answering reducible to the standard database queries. Completely we plan to extend our pathto distributed module established DMS's where answering queries combines knowledge of the several modules associated between possibly several reference DMS's.

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