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WEB MINING DRIVEN OBJECT LOCATOR MOBILE APPLICATION

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ABSTRACT:

We, the human beings possess the nature of placing objects somewhere and forget the location. In order to overcome this problem we propose an application that extracts information from web related data sources to locate the lost objects. Object detection is a computer technology related to computer vision and image processing that deals with detecting instances of semantic objects of a certain class. Web mining is used to automatically discover and extract information from Web-related data sources such as documents, log, services, and user profiles. In addition to these concepts we use CSOL which adds value to our paper. The common-sense knowledge about object locality (CSOL) is a very helpful context information and collection of facts that an ordinary person is expected to know. In this paper we propose the use of image processing techniques and web mining concept to discover and gather information related to location of the object from web document and services.

Keywords: ***common-sense knowledge about object locality (CSOL), Web Mining.***

INTRODUCTION:

Web Data Mining is an important area of Data Mining which deals with the extraction of interesting knowledge from the World Wide Web (WWW). Traditionally, Web Mining is divided into three classes:

Web Content Mining–discovery of useful information from text, image, audio or video data in the web.

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Web Structure Mining – analysis of the node and connection (graph) structure underlying single web sites, as well as larger collections of interrelated sites.

Web Usage Mining – Often called Web analytics involves extracting useful information from server logs and other sources detailing usage patterns.

An image processing operation typically defines an image g in terms of an existing image f.

Examples: We can transform either the domain or the range of f. Domain transformation is given by, $g(x,y) = f(t_x(x,y),t_y(x,y))$ and Range transformation is given by, $g(x,y)=t_{x,y}(f(x,y))$.

Grey Scale: In a (8-bit) grey scale image each picture element has an assigned intensity that ranges from 0 to 255. A grey scale image in what people normally call a black and white image, but the name emphasizes that such an image will also include many shades of grey.

In order to perform efficient and reliable object search, common sense knowledge is required about the structure of object and the

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environment it might be placed. This common-sense conceptual knowledge, which describes the relational structures between objects and their surrounding environment is probabilistically represented. This representation is capable of modeling uncertainty and hence increase reliability of the application. Although common-sense conceptual knowledge about the relations between object and its environment is used to benefit visual search, it requires large scale knowledge base for probabilistic representation. To overcome the limitation in data source, online knowledge extraction can be applied. The broad availability and open accessibility of the World Wide Web (WWW) provide the application with opportunities for novel knowledge acquisition techniques and strategies.

EXISTING SYSTEM:

In recent years, there are many applications for object search using GPS facility. Those applications make use of a small sensory Chip called "Tile". The Tile needs to be placed inside or attached to the object that the user thinks important and not to be lost. When the object lost or misplaced, the GPS system in the application searches for the tile location. The device displays details about the location of tile in terms of direction, linear and angular distances. The limitation of this application is that the Tile needs to be attached with the object and that the search is limited to certain objects.

PROPOSED SYSTEM:

The efficient object search can be done with the help of robot. But the robot design is considered to be a complex process. The design and implementation of robot itself needs more man power and logical thinking. And the entire system makes the system more costly and unreliable. So we propose an application which can be run in any mobile device. It allows the user to input the sample image in two ways. One way from internal storage and other from web results. If the image of the object is available in the storage of device then it can be taken as input which may be the exact image of the object. And the other way enables to enter the object name in search engine. later various sample images are taken. While the conceptual knowledge is acquired from web mined sources available in WWW. The data mined in WWW is taken for calculating probability about the existing location of the object. The output result is stored in application's knowledge base after knowledge engineering process. Through collected and interpreted data, the application will be ready for search. Then the device starts searching on moving the device that enabled with camera facility over the assumed environment. On detecting the similar object, the application prompts with beep sound and displays with identifier mark. If the object is the required one then then the user stops the application else he continues the search until the required object is found. The object detection is performed by comparing with sample image through image processing techniques.

I. Common Sense Knowledge about Object Locality(CSOL):

The CSOL knowledge acquired from the web can be categorized into three varieties according to the different information sources, image retrieval results, web text mining results and professional database query results. The obtained knowledge from these various sources have been successfully adopted for generating spatial concepts to perform object search tasks in indoor mobile scenarios.

Assumption about CSOL Knowledge:

An important assumption about CSOL knowledge we have made here is that the probability of locating an object at the specific place is in direct proportion to the probability of finding object-location coupling representations in all the documents that contain locality representations. The semantics involved in this assumption is, roughly, that the ratio of the hits returned by searching "object in/on the location" compared to the hits returned by searching "location" only,

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reflects the popularity of this object at this location, and
can thus be used as the likelihood of finding this object at this location when the device is performing the search task.

The mathematical representation of this assumption can be formalized as follows,
$\rho(find\ object\ O\ at\ location\ Li) \propto \rho(O|Li)$
$\rho(O|Li) = \rho(O \cap Li)\rho(Li) = \#\{O \cap Li\}\#\{Li\}$
where $\rho(O \cap Li)$ and $\rho(Li)$ denote the probabilities of discovering documents /images that contain searched items of "object O + location Li" or just locations Li in the documents/images repository. Symbol $\#\{\cdot\}$ represents the number of hits returned by the search engine when resolving task of various queries.

Mathematic logic:

It is the general approach to representing and reasoning knowledge for this application due to its significantly important role in artificial intelligence (AI) research. The conventional and state-of-the-art mechanisms use Description Logics (DL) to describe and reason about the conceptual knowledge ontologically. Description Logics, which consist of a family of formal knowledge representation languages, are of significant importance in providing the ontological representation of knowledge. It integrates the expressive way of Propositional Logic (PL) and efficient decision of First-order Logic (FoL). We use a practical knowledge example to introduce the development of applying these mathematic logics.
PL interprets the true or false statements formally with formulas. For instance, the typical spatial knowledge in this application – "Red cup is on the table", which is a true proposition, can be interpreted as *OnTable(Redcup)*, where *OnTable()* denotes the propositional function and *Redcup* is a variable parameter. While propositional logic covers simple declarative propositions, first-order logic additionally extends with predicates and quantification, i.e. "All the cups are on the table" is interpreted by FoL as *OnTable(X),X= {Allcups}*, where curly brackets *{}* delimit the set of variable collections. However, once the information resources involve uncertainty quantification or the reasoning process yields uncertain results, DL with the integration of PL and Fool cannot provide solutions within reasonable calculation effort to enable uncertainty-savvy logical reasoning.

II. Related Work:

In this section, we first give an overview of the mobile application, then we will briefly describe the common sense object locality (CSOL) knowledge. The recent research demonstrates that the common-sense object locality(CSOL) knowledge has played an important role in mobile application. Although the aforementioned literature have applied CSOL knowledge to facilitate more efficient behaviour, all of them use the conventional way to generate the CSOL knowledge, which is manual-input, predefined and restricted to searching a single object. Rapid development of World Wide Web techniques provides researches with opportunities for obtaining huge, dynamic, diverse and interactive information.

CONCLUSION AND FUTURE WORK:

A common-sense object locality (CSOL) knowledge acquisition mechanism is incorporated. The likelihood of locating various types of object in the environment is found out using the degree of belief concept which obeys the probability calculus. The knowledge acquired from the web about the lost object is collected to have an idea of where the object is located. The object search scenario performed by an indoor mobile device has shown the improvement of efficiency when the acquired knowledge has been taken into consideration. The knowledge source is acquired from internet that it increases time complexity in the overall process. Future work will extend in reducing space and time complexity of the application. Also efficiency and accuracy of the search will be taken into consideration in future work.

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