Applying Neural Network to Combining the Heterogeneous Features

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الخلاصة

ممكن أن تظهر محتوى صورة من حيث الخصائص المختلفة مثل اللون والشكل، أو شروح النص المختلفه. ان استرجاع هذه الميزات يمكن أن تكون مختلفة ألانواع من حيث الجمع بين القيم الميزة. ان أنواع مختلفة من نظم قواعد البيانات هي قيد الاستخدام حاليا للجمع بين القيم والميزه من حيث الدقة،حيث يمكن جعل هذه الموارد و المعلومات على الفور متاحة لكثير من المستخدمين من خلال أنظمة الكمبيوتر الحالية، لأن هذه الأنظمة غالبا ما تستخدم نماذج بيانات مختلفة ومختلف انواع لغات الاستعلام لمستخدمي النظام الواحد حيث لا يمكن الوصول إلى البيانات المخزونة في الأنظمة بسهولة وبالتالي، هناك حاجة متزايدة إلى أدوات معينة لتحقيق أقصى قدر من إعادة استخدام والتشغيل لخدمات على استقلالية قواعد البيانات الموجودة مسبق.في هذا البحث تم استخدام الشبكات للخلايا العصبية العلائقية ولكن ببيئات مختلفة البرمجيات وتصنيف الصفات وفقا لمواصفات معينة وقيم البيانات، ثم تم تدريب الشبكة العصبية للاعتراف بهذه الصفات

ABSTRACT

The content of an image can be shown in terms of different characteristics such as color, texture, shape, or text annotations. Retrieval based on these features can be various by the way how to combine the feature values. Various types of database systems are currently in use today, these information resources could be immediately made available for many users through existing computer systems However, since these systems often use different data models and different query languages users of one system cannot easily access the data In this paper, A Feedforword Neural Network has been introduced to integrates three Heterogeneous multidatabases with the same model relational but different software environments and present a procedure using a classifier to categorize attributes according to their field, specifications and data values.
Then train a neural network to recognize attributes different sites.

1. INTRODUCTION

In today's enterprises information is typically distributed among multiple heterogeneous database management systems. Systems used to manage multi databases are called multi database systems (MDBSs).Independently local stored in other systems. There is a growing need for tools to maximize the reusability and interoperability of arbitrary computing services while keeping the autonomy of pre-existing databases in federated approach. The global of a multidatabase system is schema exported from the underlying databases. One way of achieving interoperability among heterogeneous and autonomous database management systems is to develop a multi database system which supports a single common data model and a single query language on top of different types of existing systems.

transactions are submitted directly to a local Database system (LDBS) by local applications. An Multi Database System should provide a mechanism to globally manage transactions. However global transactions are long- live and involve operation on multiple and autonomous local

databases. Moreover MDBSs do not have any information about the existence and execution order of local transactions. The availability of database and of computer network rises to a new field "Distributed database system" which is an integrated database built on top of computer network rather than on a single computers[2]. The data which constitute the databases are stored at the different sites of computer networks, and the application programs which are run by the computers access data at Therefore, distributed database is a collection of data which belong logically to the same system but spread over the sites of a computer network [1].

An approach to accommodating semantic heterogeneity in a federation of interoperable, autonomous, heterogeneous database is presented by: JOACHIM HAMMER [12].

Andrei Lopatenko [13]. Has also presented a user demands to have access to complete and actual information about research may require integration of data from different CRISs.

Norio Katayama[14]. Presents a Hy-NeSS model and its query interface for that purpose. The HyNeSS model integrates the entity relationship model and the predicate logic, and provides a universal and formal expression for network-oriented data.

Tapio Niemi (15). Presents a middleware that combines the flexibility of distributed heterogeneous databases with the performance of local data access.

2. ARTIFICIAL NEURAL NETWORKS (ANN)

An artificial neural network (ANN) is an information processing paradigm that is inspired by biological nervous systems, such as the way the brain processes information. The key element of this paradigm is the novel structure of the information processing system. Thus, an ANN has been a lively field of research [2,3,4,5]. ANN is composed of a large number of highly interconnected processing elements (neurons) that work in unison to solve specific problems. Similar to the human brain [6]. A neural network consists of interconnected processing units that operate in parallel; each unit receives inputs from other units. The unit then obtains the sum of these inputs and calculates the output, which is then sent to the other units it is connected to. The learning or the knowledge acquisition results from the modification of the strength of the connection (weight) between the interconnected units .Artificial neural networks have been developed as generalizations of mathematical models of human cognition or neural biology on the basis of the following assumptions[7,8]:

1. Information processing occurs at many simple elements called neurons;

2. Signals are passed between neurons over connection links.

3. Each connection link has an associated weight, which multiplies the signal transmitted in a typical neural network.

4. Each neuron applies an activation function (usually nonlinear) to its net input (sum of weighted input signals) [8,9].

3. NEURALNETWORKS ARCHITECTURES

The arrangement of neurons into layers and the connection patterns within and between layers is called the “network architecture.” Neural networks are often classified as either single layer or multilayer [9].

3.1 SINGLE-LAYER NEURAL NETWORKS

A single-layer network has one layer of connection weights. The units can often be distinguished as input units, which receive signals from the outside world, and as output units, from which the response of the network can be read. In a typical single-layer network Figure(1), the input units are fully connected to the output units, but not to other input units. Similarly, the output units are not connected to other output units [8].

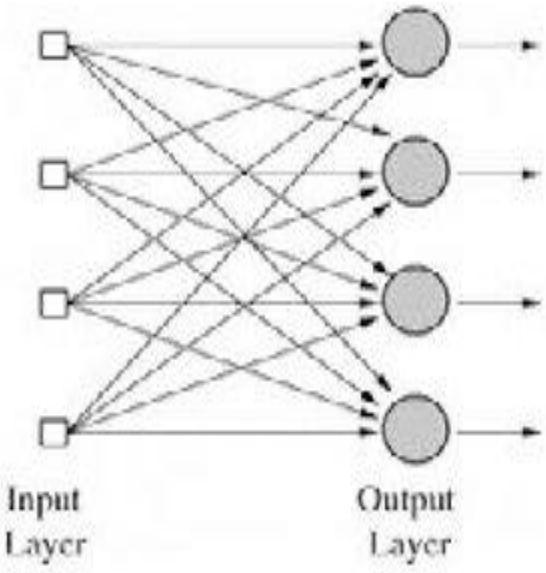

Figure (1):. A Single- Layer Neural Network [8].

3.2 MULTILAYER NEURAL NETWORKS

A multilayer network is composed of one or more layers (or levels) for nodes (the so-called hidden units) between the input and output units Figure (2). Typically, a layer of weights exists between two adjacent levels of units (input, hidden, and output). Multilayer networks can solve more complicated problems than a single-layer network could. However, training the former may be more difficult than training the latter. Multilayer perceptron neural networks are useful for classification purposes [8,9].

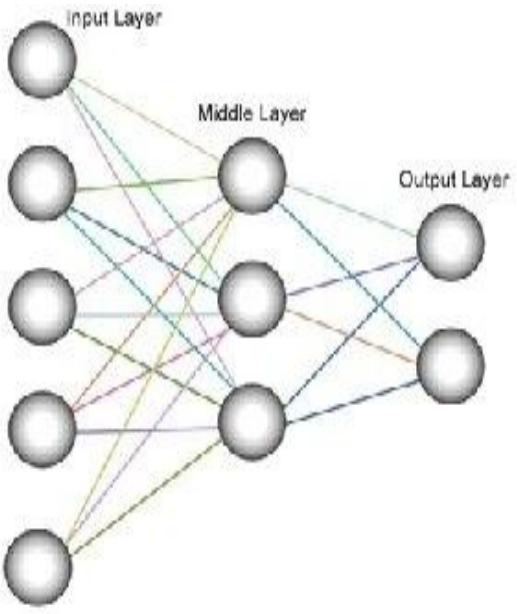

Figure (2): Multilayer Neural Networks [9].

4. DATABASE SYSTEM

The word database (DB) is in such common use that we must begin by defining a database:

A database (DB) is a collection of interrelated data, stored together without harmful of unnecessary redundancy to serve multiple application. The data is stored such as to be independent from the program which uses it.

A database represents some aspects of the real world, sometimes called mini world. Changes to the mini world are reflected in the database [10].

Today a database system in a large organization consists of hardware, software, data, and people. The hardware configuration is comprised of one or more computers, disk drive, terminal, printer, and other physical devices. The software includes a Database Management System (DBMS) and application program which uses the DBMS to access and manipulates the database. The data, representing the recorded facts important to the organization, resides physically on disk but logically structured in a way to make its access easy and efficient. People, both database system users and applications, work together to define the characteristics and structure of the database system to create the application programs which will provide the information essential to the company's success [11].

Database system eliminates problems with data redundancy on data control. Data is control via a data dictionary system which is itself controlled by a group of company employees known as Database Administrator (DBA), who has this control responsibility and we might consider him as part of the database system.

All of these features database systems simplify the effort and reduce program maintenance.

Let us now consider the advantages of database system the ability to operate in different data structures. Redundancy can be reduced, Independent of data from the medium on which it stored. High speed of retrieval and fast online use, Inconsistency can be avoided. Stored data can be shared. Standards can be enforced, minimum costs, by minimizing the required total storage, data integrity can be maintained.

Security restrictions can be applied. Conflicting requirements can be balanced[11,12].

The increase in data volumes led to the categorization of DBs in two broad groups, homogeneous and Heterogeneous. The comparison is based on different levels in a distributed database: The hardware, operating system, and the local DBMSs. However, an important distinction for is at the level of local DBMSs, because differences at lower levels are managed by the communication software[14] .

5. METHODOLOGY

INTEGRATION OF DATABASE

One of the main concerns when integrating data from heterogeneous data sources is data redundancy. In today's enterprises information is typically distributed among multiple heterogeneous database management systems[13]. The heterogeneity exists at three basic levels[14]. The first is the platform level. Database system resides on different hardware, use different operation systems and communicate with other systems using different communications protocols[16]. The

second level of heterogeneity is the database management system level. Data is managed by a variety of database management systems based of different data models and languages (e.g. file systems, relational database systems, object-oriented database systems etc.). Finally the third level of heterogeneity is that of semantics. Since different databases have been designed independently semantic conflicts are likely to be present. This includes schema conflicts and data conflicts. Commercially available technology offers inadequate support both for integrated access to multiple databases and for integration multiple applications into a comprehensive framework. Some products offer dedicated gateways to other DBMSs with limited capabilities. Thus they require a complete change of the organizational structure of existing database to cope with heterogeneity [15,16,17,18]. The structure and the internal design of the paper connect and manage more than data source in one time, in our proposed system it connect to three databases[20,21]. The managements represent the main database operations which are (insert, delete, update, search, filtering and reports)[23].

Schema Integration

• Preintegration: identify the keys and defines the ordering of the binary processing approach.

• Comparison: Identification of naming and structural conflicts.

• Conformation: Resolution of the naming and structural conflicts.

• Restructuration and Merging of the different intermediate schema to the global conceptual scheme (GCS)

Schema translation means the translation of the participating local schemes into a common intermediate canonical representation

• Schema translation is the task of mapping one schema to another.

• Requires the specification of the target data model for the global conceptual schema

• Some rare approaches did merge the translation and integration phase, but increases the complexity of the whole process.

6.**Learning and Recognition Algorithm**

The back-propagation learning algorithm is a learning algorithm, in which target results are provided. It has been used for various tasks such as pattern recognition, control, and classification. Here we use it as the training algorithm to train a network to recognize input patterns and give degrees of similarity. The structure of the network is designed as follows: There are N nodes in the input layer on the left, each of which represents a discriminator. The hidden layer consists of (N+M)/2 nodes in the middle. The output layer (on the right side) is composed of M nodes (M categories). The tagged data generated by the classifier is used as training data. During training, the network changes the weights of connections between nodes so that each node in the output layer generates its target result (corresponding category number). The forward propagation (generating output), error calculation (computing the difference between the actual output and target output), and backward propagation (changing weights based on the errors calculated) continue until the errors in the output layer are less than the threshold. After training, the network encodes data by matching each input pattern to the closest output node and giving the similarity between the input pattern (of another database) and each category (we use to train the network). The weights of these

cluster centres are then tagged to train the network. After the back-propagation network is trained, we present it with a new pattern of N characteristics, attribute “health Plan Insured“.

EXPERIMENTS AND RESULTS

The proposed system can explained in details from the design and implementation as follows:

1. Retrieve distributed queries from client workstations.
2. Decompose the global queries to multiple local subqueries to be executed at each of the two sites.
3. Generate distribute the execution strategies for each site (this includes the global site that has to process and route the final result rows to the requesting client).

This network determines the similarity between the input pattern and each of the M categories, the network shows that the input pattern “Insured” is closest to the category. It also shows the input pattern is not similar to since the similarity is low.

4. The system is providing almost advantages of DBMS, such as availability, reliability, distribution transparency.
5. The proposed system build in bottom-up approach using different active X data control, related with two different databases (Access, FoxPro); the data control that uses in the Access Client design, as well as the Data Environment is uses in the FoxPro Client design.
6. Process the final result table.

CONCLUSIONS

In this paper, we establish a system in which the human elbow grease needed for integration is minimized. We apply a self-organizing classifier algorithm to categorize attributes and then employ a back-propagation learning algorithm to develop a network to recognize input patterns and shape similarity between attributes. The following conclusions are drawn from the design, implementation, and experimental results of the proposed system.

1-Investigating alternatives to back propagation that will allow us to use a single network regardless of the discriminators available.

2-Concentrated on matching attributes (the heterogeneity of organizational models problem).

3-Investigating use of this technique in uncertain data query and join operations by attacking some of the other levels of heterogeneity described.

4-Our technique can also be combined with to support operations over partially matched domain and uncertain data queries in heterogeneous databases.

5-Each trained classifiers over the same training set is used independently to perform attack detection. The evidences are combined in order Combining Heterogeneous Classifiers for Network Intrusion Detection
to produce the final decision.

6-Retrieve distributed queries from client workstations.

7-Decompose the global queries to multiple local subqueries to be executed at each of the two sites.

8-Generate distribute the execution strategies for each site (this includes the global site that has to process
and route the final result rows to the requesting client).

9-Knowledge is acquired by the network through a learning process.

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