

Olap Using Student's Result Analysis

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Abstract—Data Mining is now possible due to advances in computer science and machine learning. Data mining delivers new algorithms that can automatically sift deep into your data at the individual record level to discover patterns,relationship, factors, clusters,associations,profiles,andprediction.

1. INTRODUCTION

Oracle Data mining, a collection of machine learning algorithms embedded in the oracle database, allows you to discover new insight, segments and association to make more accurate predictions, to find key variables,to detect anomalies and extract more information from your data. For example, Identifying best students by analysing your students. ODM can discover profiles and embed predictive analycis in applications that identitfy students who are likely to be your best students who are the best performance in the examination of subject and behavior with staff and learning skills , who are the worst students in the examination with subject and handle the staff and learning skills with ODM can apply predictive models to generate reports.

2. EXISTING SYSTEM

We are using OLAP tools only Business Oriented problems solved. For Example analyzing the best customer for in our Business. and analyzing the new customer and analyzing the profit and loss in our business.

3. PROPOSED SYSTEM

Now we are using OLAP tools Students result problems solved. For Example who are likely to be your best students who are the best students in the examination with subject and handle staff and teaching method, who are the worst students in the examination with subject and handle staff and teaching method with ODM can apply predictive models to generate reports.

4. ORACLE DATA MINING

Oracle Data Mining, a component of the Oracle Advanced Analytics Option,Decision Tree inside the Oracle Database. Since Oracle Data Mining functions reside natively in the Oracle Database kernal,The student's performance,scalability and security. Oracle Data Mining 11g Release 2 supports twelve in-database mining algorithms that address classification, regression, assciation rules,clustering,attribute importance,and feature selection problems, Working with Oracle Text(Which uses standared SQL to index, search,and analyze text and documents stored in the oracle database, in files, and on the web),many ODM mining functions can mine both structured and unstructured (text)data.

ODM provides PL/SQL and SQL application programming intrfaces(APIs)for model building and model scoring functions. An optional Oracle Data Miner graphical user interface(GUI) that is available for download from OTN is

available for data analysts who want to use a point and click GUI.

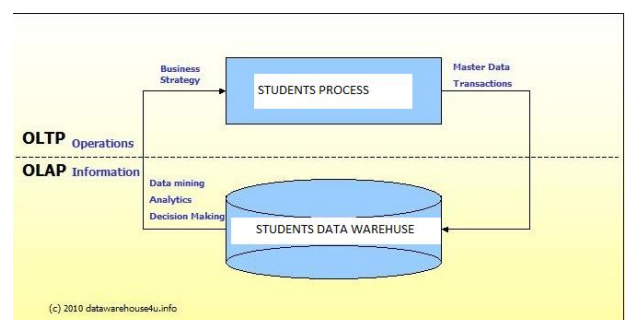
5. RANGE OF STUDENTS INTELLIGENCE

Now let's describe what data mining is and how it both differs from one Student to another student –query and reporting.OLAP, and statistical tools.Let's also look at some common definitions of students intelligence tools

SI, OLAP AND DATA MINING

SI	OLAP	DATA MINING
Extraction of detailed and roll up data “Information”	Summaries trends and forecasts “Analysis”	Knowledge discoveryof hidden patterens “Insight & Prediction”
who are likely to be your best students and worst students	Which Subject to the best and worst students	Which Teaching method use to the best and worst Students

OLAP tools go beyond basic SI and allow Students mark to rapidly and interactively drill-down for more detail,comparisons,summaries and forecasts. OLAP is good at drill-downs into the details to find, for example' “who are likely to be your best students and worst students”



6. ABOUT OLAP

OLAP (online analytical processing) is a computing method that enables users to easily and selectively extract and query data in order to analyze it from different points of view. OLAP Students intelligence queries often aid in trends analysis, Students result

HOW OLAP SYSTEMS WORK

Analysts can then perform five types of OLAP analytical operations against these multidimensional databases:

- **Roll-up.** Also known as *consolidation*, or *drill-up*, this operation summarizes the data along the dimension.
- **Drill-down.** This allows analysts to navigate deeper among the dimensions of data, for example drilling down from "time period" to "years" and "months" to chart sales growth for a product.
- **Slice.** This enables an analyst to take one level of information for display, such as "result in 2019."
- **Dice.** This allows an analyst to select data from multiple dimensions to analyze
- **Pivot.** Analysts can gain a new view of data by rotating the data axes of the cube.

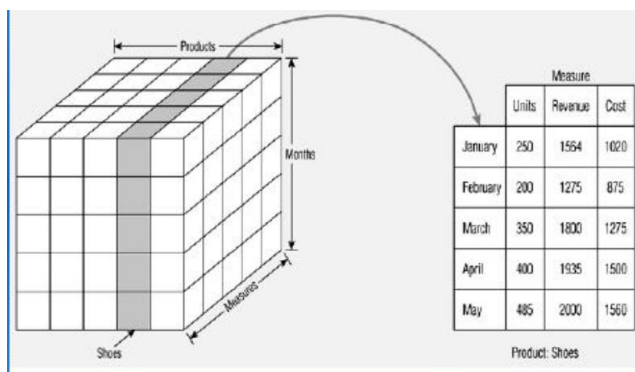
7. TYPES OF OLAP SYSTEMS

OLAP (online analytical processing) systems typically fall into one of three types:

Multidimensional OLAP (MOLAP) is OLAP that indexes directly into a multidimensional database.

Relational OLAP (ROLAP) is OLAP that performs dynamic multidimensional analysis of data stored in a relational database.

Hybrid OLAP (HOLAP) is a combination of ROLAP and MOLAP. HOLAP was developed to combine the greater data capacity of ROLAP with the superior processing capability of MOLAP.



Top 10 Best Analytical Processing (OLAP) Tools: Students Intelligence

- 1) IBM Cognos.
- 2) Micro Strategy.
- 3) Palo OLAP Server.
- 4) Apache Kylin.
- 5) icCube.

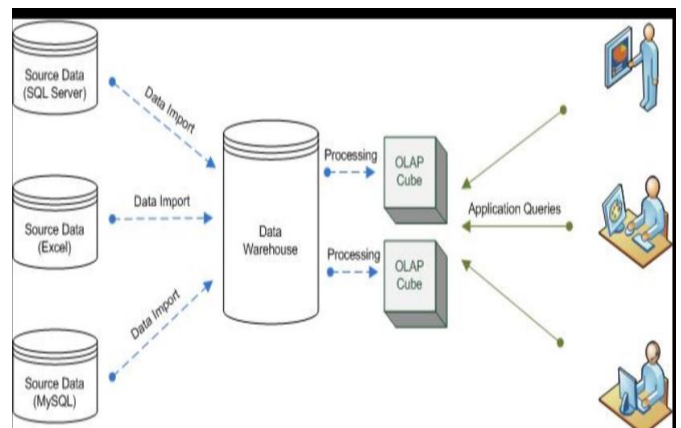
6) Pentaho BI.

7) Mondrian.

8) OBIEE.

THE OLAP CUBE

- An OLAP Cube is a data structure that allows fast analysis of data
- The arrangement of data into cubes overcomes a limitation of relational database.
- It consists of numeric facts called measures which are categorized by dimensions
- The OLAP cube consists of numeric facts called measures which categorized by dimensions



8. DATA MINING DEEP DIVE

Oracle Data Mining provides a collection of data mining algorithms that are designed to address Decision Tree. Different algorithms are good at different types of analysis. Oracle Data mining supports classification, regression, clustering, association, attribute importance and feature extraction problems.

The Data Mining Process

Before We start mining data, We need to define the problem we want to solve and, most importantly, gather the right data to help us find the solution. If we don't have right data, we need to get it. If data mining is not properly approached, there is the possibility of "garbage in – garbage out". To be effective in data mining, You will typically follow a four-step process:

Defining The Student's Result

We analytics to all students mark list and then which students take the best mark and worst mark, and find out the Which Subject take the best mark and work in the examination and Who are the Handled the staff and How to use the teaching method

Gathering And Preparing The Data

Now we take a closer look at our data and determine what additional data may be necessary to properly address our

Students problem. We often begin by working with a reasonable sample of the data. For example, We might examine several hundred of the many thousands, or even millions, of case by looking at statistical summaries and histograms. We prepare the so many of the data for example student marklist sid,sname,subject,teacher,mark1,mark2, mark3,mark4, mark5,total,avg,grade from existing fields.The power of SQL simplifies this process.

Model Building And Evaluation

Now we are ready t build models that sift through the data to discover patterns. Generally,We will build several models,each one using different mining parameters,before we find the best Or most useful model(s)

Knowledge Deployment

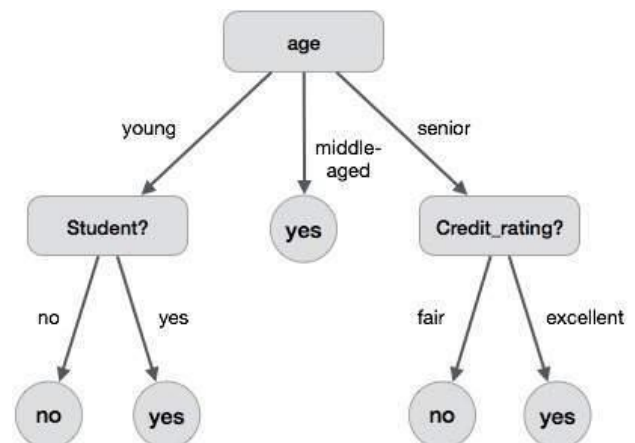
Once ODM has built a model that models relationships found in the data,we will deply it so that users, such as **who are likely to be your best students and worst students**, can apply it to find new insight and generate predictions. ODM's embedded data mining algorithms .Oracle Data Mining provides the ideal platform for building and deploying advanced Students intelligence application



9. DECISION TREE ALGORITHM

A decision tree is a structure that includes a root node, branches, and leaf nodes. Each internal node denotes a test on an attribute, each branch denotes the outcome of a test, and each leaf node holds a class label. The topmost node in the tree is the root node.

The following decision tree is for the concept buy_computer that indicates whether a customer at a company is likely to buy a computer or not. Each internal node represents a test on an attribute. Each leaf node represents a class.



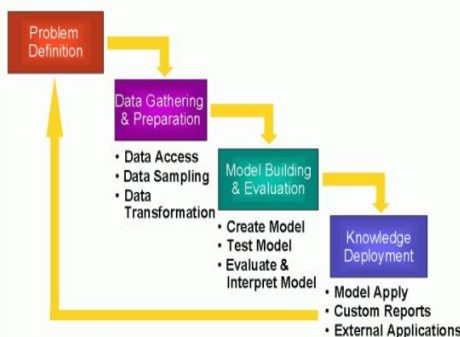
The benefits of having a decision tree are as follows –

- It does not require any domain knowledge.
- It is easy to comprehend.
- The learning and classification steps of a decision tree are simple and fast.

10. DECISION TREE INDUCTION ALGORITHM

A machine researcher named J. Ross Quinlan in 1980 developed a decision tree algorithm known as ID3 (Iterative Dichotomiser). Later, he presented C4.5, which was the successor of ID3. ID3 and C4.5 adopt a greedy approach. In this algorithm, there is no backtracking; the trees are constructed in a top-down recursive divide-and-conquer manner.

The Data Mining Process



The data mining process involves a series of steps to define a business problem, gather and prepare the data, build and evaluate mining models, and apply the models and disseminate the new information.

Exadata And Oracle Data Mining

Oracle Exadata is a family of high performance storage software and hardware products that can improve data warehouse query performance by a factor of 10x or more. Oracle Data Mining Scoring functions in Oracle Database 11g Release 2 score in the storage layer and permit very large data sets to be mined very quickly, thus further increasing the competitive advantage already gained from Oracle's in-database analytics.

Input:

Data partition, D, which is a set of training tuples and their associated class labels.

attribute_list, the set of candidate attributes.

Attribute selection method, a procedure to determine the splitting criterion that best partitions the data tuples into individual classes. This criterion includes a splitting_attribute and either a splitting point or splitting subset.

Output:

A Decision Tree

Method

create a node N

if tuples in D are all of the same class, C then
return N as leaf node labeled with class C;

if attribute_list is empty then

return N as leaf node with labeled
with majority class in D;|| majority voting

apply attribute_selection_method(D, attribute_list)

to find the best splitting_criterion;

label node N with splitting_criterion;

if splitting_attribute is discrete-valued and

multiway splits allowed then // no restricted to binary trees

attribute_list = splitting attribute; // remove splitting attribute

for each outcome j of splitting criterion

// partition the tuples and grow subtrees for each partition

let Dj be the set of data tuples in D satisfying outcome j; // a partition

if Dj is empty then

attach a leaf labeled with the majority
class in D to node N;

else

attach the node returned by Generate
decision tree(Dj, attribute list) to node N;

end for

return N;

11. CONCLUSION

This method is very useful to know how to approach the worst students and get the idea to changing the teaching method.

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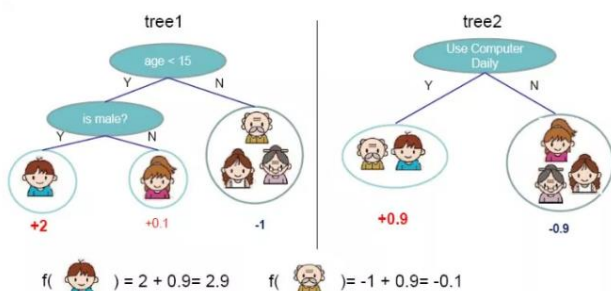
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Decision tree model example Image Credit: <http://zhanpengfang.github.io/>

Decision Trees follow Sum of Product (SOP) representation. For the above images, you can see how we can predict can we accept the new job offer? and Use computer daily? from traversing for the root node to the leaf node.