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Pattern Evaluation Using Data Warehouse: A Case Study

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Abstract- Data pattern to be obtain by cretin advance system using different network. Event occur at particular places, for this purpose pattern evaluation perform. Data warehouse played important role in the contemporary system for pattern evaluation.The study wants to convey different s style for pattern evaluation system. Case study is using as research methodology which is utilizing for proving the identical objective of the research. The study take support from the past researches base on pattern evaluation. In many cases data utilized as a secondary data. Here secondary data is important because the study using case study methodology. The work tries to observe this cases and observing the pattern evaluation is important for data warehouse.

Keywords- *Pattern Evaluation*

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I. INTRODUCTION

The study introduced pattern based methods. It also specify the practical approach of development, identification, utilization and analysis of the pattern and have proved the importance of patterns for data warehouse or for decision support system. It indicates the approach of pattern utilization specifically. It also clarifies the stages where pattern can be played crucial role for data warehouse or decision support system.

II. LITERATURE REVIEW

Kay Romar, Distributed Mining of spatio-temporal event pattern in sensor network. Shyam Varan Nath, Oracle Corporation, Crime Pattern Detection Using Data Mining. Prakashkumar Trivedi, A practical approach of pattern intresting mesure.

III OBJECTIVES

- By using pattern evaluation Manager, Higher Authorities, Decision Maker will take proper decision.
- By Using Data Mining and Data Warehouse the research work has been trying to high light the advance pattern, algorithm, method, architecture for pattern evaluation.
- Prove the importance of Pattern Evaluation using data mining, data warehouse, mobile sensor and it's network.

IV RESEARCH METHODOLOGY

The research work would be based on case study research methodology. As secondary data, sample of the research have taken from the past researches.

V. PROPOSE WORK

Case Study 1:

1. EVENT: A volcano monitoring application.

Explanation:There are monitoring volcanic eruption. The study observe wireless sensor network.[23] This event might be taken through the occurrence of seismic shocks, infra-sounds shocks, excessive emission of certain indicative gases, or the occurrence of an irruption. Here the event is identifier such as "irruption" plus the epoch when it occurred and the location of the node where it was observed. In the same study each epoch, a node can generate at most one instance of each event type. More occurrence in one epoch are considering as single instance. The generation of event is up to the application, which simply has to inform the mining system executing on the node of occurrence of event. Study observed the generation of either based on sensor output or on certain system parameter. It indicate that the sensor node are highly unreliable systems that can produce wrong sensor reading that would be result in a spurious or false events. Here data cleaning method have applied to reduce the probability of such false information. The data mining approach could even be used to discover pattern among such spurious event.

2. PATTERN: The study observes the bellow mention definition of pattern.

2.1. Pattern Name: Spatial-Temporal Pattern.

2.2. Pattern Observation:

The system has observed frequent spatial temporal pattern among these event, such as "within 20 minutes after an irruption event, there are frequent seismic shocks event with high probability. This is how the seismic events

have occurred. It specifies lower bounds for the frequency and confidence of patterns, and also specify a maximal spatial and temporal scope. The system has considered and reported patterns among the given events occurring within the spatial and temporal scopes within the given minimum frequency and confidence.

2.3. Data Mining Technique and Importance of Event Pattern:

(I) Data Mining Technique: Apply the association rules.

The study observe the event pattern based on data mining technique known as association-rule mining which was originally conceived to find pattern. Example: Among the items that are frequently shopped together such as "If buy milk then also bread with high probability"More formally, It consider item i Є I.

(II) Importance of event pattern and data mining technique.

Here the pattern has taken as an essential aspects for data mining as well as For decision support system. Pattern took curtail role for implementation of the decision support system. The system has utilized frequent spatial temporal pattern among these event. The work utilized the under mention data mining process for It's further process.

1. Data Cleaning- The removal noise inconsistent data.
2. Data Integration-The combination of multiple sources of data.
3. Data Selection- The data relevant for analysis is retrieved from the database.
4. Data Transformation- The consolidation and transformation of data into form appropriate for mining e.g., performing aggregation or summery of data.
5. Data Mining- The use of intelligent method to extract pattern from data.
6. Pattern Evaluation- Identification of pattern that are interesting.
7. Knowledge Presentation- Visualization and knowledge representation technique are used to present the extracted or mined knowledge to the end user.

3. EVENT DISTRIBUTION: By applying framework that support neighborhoods abstractions such as abstract regions or logical neighborhood the study observed each node in the network collects event notification from nodes in a neighborhood of size max scope. There the study find the utilization of discretization of distance discussed in the section, in network data aggregation is applied to collect the frequency of each event for each distance partition in the neighborhood of the node. There are occurrence of each event at distance "near" and "far". Since the study is interested in event pattern over longer period of time, it is typically not necessary to collect event summaries.

4. GLOBAL PATTERN:

The study observed all node in the network in frequently report discovered pattern or subset thereof to the sink along with the location of the reporting node and the time interval during which this pattern were discovered. Further the study pointed out that a pattern can be efficiently represented as a bit vector of items plus support and confidence values, there sink can reconstruct pattern.

$A1\Lambda \ldots\Lambda\ A1 \Longrightarrow E\ [\ S,C\ ]$

The node then executes a mining algorithm for discovering patterns among this collected events. Every node n mines pattern of the above mention equation form. The sink may perform a secondary mining procedure over the reported pattern in order to construct a more global picture.

RESULT: Observe the performance of pattern in all the stages of the study.

Stage 1: EVENT NAME 1.Observed a volcano monitoring application.

Role of Pattern: 1.The data mining approach could even be used to discover pattern among such spurious or false event at the initial stage.

2. Initialization of Pattern
3. Phenomena of Pattern

Stage 2 PATTERN NAME. 1. Observed Spatial-Temporal Pattern.

Role of Pattern: 1. Obtained the Identification of Spatial-Temporal Pattern 2. Obtained general definition of pattern. 3. Utilization of pattern in Data Mining Technique like, (1) Association Rule and (2) Whole process of data mining

Stage 3 EVENT DISTRIBUTIONS 1. Obtained the Collection of event notification from the nodes Role of Pattern: 1. Obtained interested event pattern over longer period of Time 2. There are occurrence of each event at distance "near" and "far". 3. Support neighborhoods abstractions such As abstract regions or logical neighborhood

Stage 4 GLOBAL PATTERN

1. Observed all node in the network in frequently report discovered pattern.

Role of Pattern: 1.A pattern can be efficiently represented. As a bit vector of items plus support and confidence values, there sink can reconstruct pattern.

$A1\Lambda \ldots\Lambda\ A1 \Longrightarrow E\ [\ S,C\ ]$

Case Study 2:

1. EVENT: A Crime Pattern Detection Using Data Mining.
Explanation:

The study converted crime information into data mining problem, such that it can help the detectives in solving crime faster.[27] In the same study it indicated as crime terminology a cluster is a group of crimes in a geographical region or a hot spot of crime. Cluster recognized as group of similar data points – a possible crime pattern. Thus appropriate cluster or a subset of the clusters have one to one correspondence to crime patterns. Clustering algorithm utilized as data mining task and are equivalent to the task of identified groups of records. That are similar between themselves but different from the rest of the data. The cluster used for identified a crime spree committed by one or same group of suspects. On the basis of obtain information the next challenges is to find the variables providing the best clustering. The cluster presented detectives to drill down using their domain expertise. The study instructed automated detection of a crime pattern. And have allowed the detective to focus on crime sprees first and solving one of the crimes results in solving the whole "spree" all in the some case of groups of incidents are suspected to be one spree, the complete evidence can be built from the different bits of information from each of the crime incidents. An example indicated as one crime site reveals that suspects has a black hair, the next incident reveals that suspects is middle aged and third one reveals there is tattoo on a left arm, all together it will give a much more complete picture than anyone of this alone. The study instructed without a suspected crime pattern, the detective is less likely to build the complete picture from bits of information from different crime incidents.2. PATTERN: The study observes the bellow mention definition of pattern.

2.1. Pattern Name: Crime Pattern.
Study have used clustering based models to help in identification of crime patterns.
2.2. Pattern Observation:
The system has observed crime pattern among these event. Here the study examined simple clustering example. There is a case of crime record. A crime data analyst or detective used a report based on this data stored a different order.
In the table crime type indicated as Robbery, Suspect Race B,W, Suspect Sex as M,F, Suspect Age gr Middle ,Young, Victim Age gr Elderly, Middle and weapon as Knife, Bat, Gun. The table indicated most important attributes. It showed a simple crime pattern where the suspect description matches and victim profile was also similar.
Data Mining Technique and Importance of Crime Pattern:
Data Mining Technique: Apply the data mining cluster analysis.
The study used clustering based models to help in identification of crime pattern.
(II) Importance of Crime Pattern and data mining technique.
The study used data mining to detect much more complex patterns since in real life there were many attribute or factors for crime and often there was a partial information available about the crime. The study have undergone and utilized the under mention data mining process using Cluster analysis.
1. Data Cleaning- The removal noise inconsistent data.
2. Data Integration-The combination of multiple source of data.
3. Data Selection- The data relevant for analysis is retrieved from the database.
4. Data Transformation- The consolidation and transformation of data into form appropriate for mining e.g. performing aggregation or summery of data.
5. Data Mining- The use of intelligent method to extract pattern from data.
6. Pattern Evaluation- Identification of pattern that are interesting.
7. Knowledge Presentation- Visualization and knowledge representation technique are used to present the extracted or mined knowledge to the end user.
3. EVENT DISTRIBUTION:
The study has divided its events and task into cluster which is indicated..

Crime	**Robbery**	**Robbery**	**Robbery**	**Robbery**
		Type		
Suspect	B	W	B	B
		Race		
Suspect	M	M	M	F
		Sex		
Suspect	Middle	Young	?	Middle
		Age grade		

Victim	Elderly	Middle	Elderly	Young
		Age grade		
Weapon	Knife	Bat	Knife	Gun

Secondary Data Source: Oracle Corporation and Nat.S.

RESULT: Observe the performance of pattern in all the stages.
Stage 1: EVENT NAME 1.Observed a Crime Pattern Detection Using Data Mining.
Role of Pattern: 1.The data mining approach could even be used to discover Crime Pattern among such event at the initial stage.
2. Initialization of Pattern
3. Phenomena of Pattern
4. Used Clustering based model to help in identification of crime pattern.
Stage 2 PATTERN NAME. 1. Observed Crime Pattern using clustering.
Role of Pattern: 1. Obtained the Identification of crime pattern.
2. Obtained general definition of crime Pattern using cluster.
3. Utilization of pattern in Data Mining Technique like,
(1) Cluster Analysis
(2) Whole process of data mining
Stage 3 EVENT DISTRIBUTION 1. Obtained the Collection of event notification from the event.
Role of Pattern: 1. Obtained interested event pattern over Geo spatial plot.
2. The system have used geo spatial plot.
3. The crime analyst may choose a time range and one or more types of crime Pattern from certain geo graphic and displayed the result geographically.
4. The set indicates, the user may select either entire set or a region of a interest.
5. The resulting set of data becomes the input source for the data mining process. These records are clustered based on the predetermine attribute and the weights.
6. The study cluster the crimes based on The weighing technique. To come with Crime groups, which contain the possible crime patterns of crime sprees.

Case Study 3:

Event: Interesting Measure

1. Pattern Evaluation

Users viewpoint is important, pattern evaluation is used to consider the interestingness of searching knowledge as per the viewpoint. Data mining system is working on number of pattern or rules. Recognize and interestingness is the goal of data mining system. Interesting pattern is using for taking decision. The work found the practical approach of finding interesting pattern.

2. Pattern Interesting Measure

Data mining process is functioning on data. Data kept in data warehouse. At the end work observed interestingness. The work is indicating the hypothesis.

Hypothesis:

- Understandability of pattern for a common man is the capability of it.
- Pattern can be novel.

The work get target on the basis of belief. At the end user got information, user is recognizing what is targeted and related to the hypothesis. User got the pattern at the end of procedure. User has their own belief, On the basis of that belief interestingness obtained.

Usability:

1. Data Source for The Work: BCA course based Merchant college Visnagar's data.
SQL Server 2008 keep the data.
mdf is considering as filename
dbo is table related extension

2. Transformation of file from SQL server 2008 to MS Excel: Start the SQL server 2008, do right click on database, select export data. Click on next button and selecting the source of data. At the end select the server name and select database. Press next and select destination. At last choose MS Excel. Go to path and view the excel new file name and press finish.
1. Source of data: In .xls format file contain a data that obtained from MCMSR college. The student data is the source.
2. User's Belief: There will be three kind of result "Pass", "Fail", "Absent"

3. Used Tool: Tanagra 1.4, A Data Mining Software.
4. Used Algorithm: Apriori Algorithm, Clustering Algorithm, K-Means Algorithms, Expectation Maximum Algorithms
5. System: Data Mining, Data warehouse. The work is exploring the pattern evaluation function.

3. Description Of Data:

Roll No is the field, primary key is providing on it. There are five field name of data from MCMSR college.Visnagar. The student and the subject related data of dbms and dtp subjects. The condition is above 28 marks will be awarded as "Pass", There will be result of "Fail" and "Absent".

The targeted result of the mined process will be expected as:

(1) How many attributes are used may be obtained.
(2) How many result expression may be observed may obtained.
(3) Gender related result may be got.

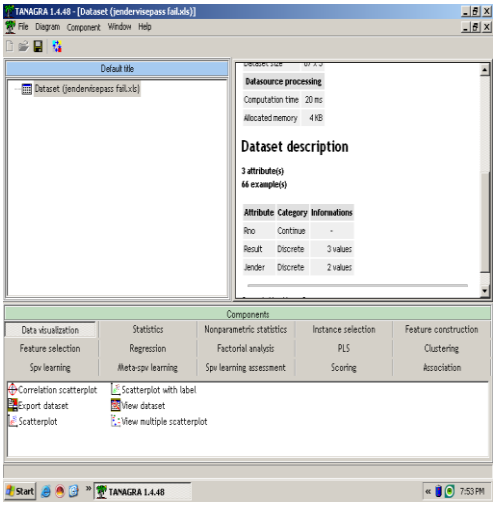
The Sample Data of MCMSR –College.Visnagar.

Table Sample Data of MCMSR-College

Roll No	Gender	Marks dbms	Marks dtp	Result	Roll No	Gender	Marks dbms	Marks dtp	Result
1	Male	42	57	pass	34	Male	64	60	pass
2	Female	22	18	fail	35	Female	64	56	pass
3	Male	42	52	pass	36	Male	66	62	pass
4	Male	66	52	pass	37	Female	33	36	pass
5	Female	32	30	pass	38	Female	63	58	pass
6	Female	11	51	fail	39	Female	46	54	pass
7	Female	54	52	pass	40	Male	67	53	pass
8	Male	33	35	pass	41	Female	66	53	pass
9	Male	56	53	pass	42	Male	61	53	pass
10	Female	28	33	fail	43	Female	58	53	pass
11	Female	0	0	Absent	44	Male	36	52	pass
12	Male	36	33	pass	45	Male	42	49	pass
13	Male	56	50	pass	46	Female	48	51	pass
14	Male	61	56	pass	47	Male	67	58	pass
15	Female	36	50	pass	48	Male	36	40	pass
16	Female	33	49	pass	49	Female	64	40	pass
17	Male	66	58	pass	50	Male	57	51	pass
18	Female	0	0	Absent	51	Female	36	44	pass
19	Female	63	54	pass	52	Female	67	54	pass
20	Male	66	52	pass	53	Female	36	44	pass
21	Female	66	60	pass	54	Female	64	50	pass
22	Female	66	56	pass	55	Male	10	54	fail
23	Male	33	35	pass	56	Male	66	56	pass
24	Female	69	63	pass	57	Female	36	41	pass
25	Male	63	58	pass	58	Female	40	53	pass
26	Female	40	45	pass	59	Male	44	40	pass
27	Female	36	51	pass	60	Female	36	34	pass
28	Female	66	59	pass	61	Male	36	55	pass
29	Female	36	50	pass	62	Male	36	55	pass
30	Female	66	50	pass	63	Male	11	34	fail
31	Male	66	51	pass	64	Male	36	20	pass
32	Female	67	59	pass	65	Male	34	51	pass
33	Female	54	53	pass	66	Male	36	52	pass

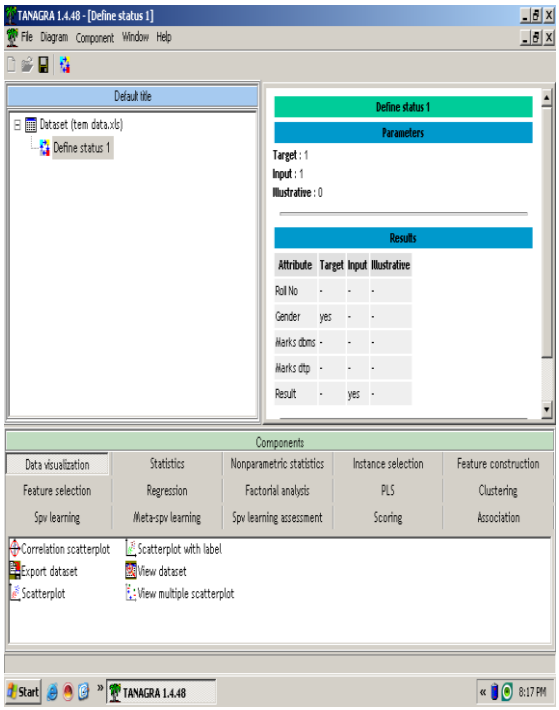
The data have taken from sybca student of MCMSR College

As Secondary Data: Trivedi P H, A Practical Approach Of Pattern Interesting Measure, IOSR Journal of Engineering, Vol.6, Issue 05,2016.Field of the data Roll No, Marks of DBMS and DTP subject have selected for data mining purpose.



Screen Shot 1:Tanagra 1.4.48 is using as data mining tool As Secondary Data: Trivedi P H, A Practical Approach Of Pattern Interesting Measure, IOSR Journal of Engineering, Vol.6, Issue 05,2016.

The data visualization, feature selection, Spv learning, Statistics, Regression, Meta-spv Learning, Nonparametric Statistics, Factorial Analysis, Spv learning assessment etc. Result is displaying as "Yes" in data mining tool. Screen shot as per below.



Screen Shot 2: Brief introduction about the algorithms used by Tanagra 1.4.48 as data mining tools.
As Secondary Data: Trivedi P H, A Practical Approach Of Pattern Interesting Measure, IOSR Journal of Engineering, Vol.6, Issue 05,2016.

(1) Apriori Algorithm:

The research work uses classical Apriori Algorithms. The Apriori Algorithms is extracting the association rules.

HYPOTHESIS CONFORMATION

-The pattern has capacity of easily understandable for a person.
As per below.

3 attribute(s)
66 example(s)

Attribute	Category	Informations
Rno	Continue	-
Result	Discrete	3 values
Jender	Discrete	2 values

Screen Shot 3: Attributes

-Degree of certainty of the pattern can be measured on new or test data. Depicted as per below.
As Secondary Data: Trivedi P H, A Practical Approach Of Pattern Interesting Measure, IOSR Journal of Engineering, Vol.6, Issue 05,2016.

Results

Attribute	Target	Input	Illustrative
Roll No	-	-	-
Gender	yes	-	-
Marks dbms	-	-	-
Marks dtp	-	-	-
Result	-	yes	-

Screen Shot 4: Degree of certainty of the pattern

As Secondary Data: Trivedi P H, A Practical Approach Of Pattern Interesting Measure, IOSR Journal of Engineering, Vol.6, Issue 05,2016.

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