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DESIGN OF TRANSACTIONAL PREDICTION USING PLAN MINE AND GENETIC ALGORITHMS

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ABSTRACT

In this paper, we represent Plan Mine Algorithm to discover the prediction problem in the context of plan failure. The Existing remedies for the problem create failures, by filtering out the frequent patterns but it also having uninteresting events. Hence by removing the irrelevant and uninterested data by means of Plan Mine techniques, the remaining data becomes more dominant and crisp in the data set. The Frequent Transactions in the online shopping makes the business more effectively and successively.

Key words: Genetic Algorithm, PlanMine, Pruning, Frequent Pattern, Mutation.

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1. INTRODUCTION

In Plan Mine, we introduce Genetic Algorithms. In order for the initial classification of sequence rules, the techniques called production system introduced. Then Pruning is applied in the following phases.

The Dataset can be classified into relevant and interesting data called as good data set and relevant but uninteresting data; we called it as bad dataset. So in order to improvise the business, the good events are to be collected and need to be stored and at the same time the bad events are to be retained. Though the good events data sets are not used for prediction, they act as a reference in the subsequent pruning stages.

The second pruning phase removes patterns which correspond to the sequence that provides support in the dataset of worst plan. Moreover, it provides very good level of support in the dataset of good plans. The Third pruning phase removes the redundant patterns. A sequence is said to be redundant if it contains a sub sequence having the same support value as itself for both data sets. At last the same kind of patterns was removed, if it contains any sub sequence that kind of patterns were captured.

2. FREQUENT PATTERN PREDICTION

The discovery of frequent patterns is irrelevant for many applications such as in error discovery. Because the error occurred are rare events, the statistical support of such a sequence is low. Hence if we restrict the search space to frequent patterns, it will be hard to find rare events. So if we increase the threshold value for the frequent patterns, we can able to distinguish the interesting patterns from any trivial sequence and possible to inspect the result also. If the events are time stamped, then it contains only categorical and numerical transaction data set. So the Problem of Predicting the failure is very much important. Hence we used Genetic type of Algorithms, in order to inspect these kinds of problems and produce the result in an efficient way.

2.1. Sequence List of Ordered Items

The frequent pattern is a sequence whose frequency exceeds some user specified threshold. A sequence is a list of ordered items.

A sequence $\beta_1 \rightarrow \beta_2 \rightarrow \rightarrow \beta_q$

Where β_i is the sequence of items.

The rationale behind frequent patterns represented in detecting precedence and casual relationships that make them statistically remarkable.

Customer	P1	P2	P3	P4	P5
Cust1	1	1	1	0	0
Cust2	0	1	1	0	1
Cust3	1	1	0	0	0
Cust1	1	1	0	0	0
Cust1	1	0	1	0	1
Cust2	1	0	0	0	0
Cust1	1	1	1	1	0
Cust1	0	1	1	0	1

From the Data set, the first customer transaction can be retrieved.

Customer	P1	P2	P3	P4	P5
Cust1	1	1	1	0	0
Cust1	1	1	0	0	0
Cust1	1	0	1	0	1
Cust1	1	1	1	1	0
Cust1	0	1	0	0	0

Sequence 1: (P1, P2, P3) → (P1, P2) → (P1, P3, P5) → (P1, P2, P3, P4) → (P2)

Sequence2: (P2, P2, P5) → (P1)

Sequence 3: (P1, P2)

Normally, a simple sequence mining represents the flow of transaction.

2.2. Drawbacks in the Existing System

The spade exploits the lattice structure of the set of all elements to decompose the problem into sub problems [1]. When we consider the list of sequence in the set of items, the lattice structure is not preserved. The main drawback is that, there is no unique k-sequence resulting from the migration of two sequences.

The hyper-lattice is to be unbounded at the top. The product A can generate an infinite sequence. But when the transactions are of finite length, and the set of transaction in a sequence is bounded from the above, the hyper lattice structure is also to be bounded. It always starts with the least element of the lattice and gradually works in a bottom up way to generate all frequent sequences. It maintains the vertical as well as horizontal structure as it proceeds from the least element to the maximum elements.

3. OUR TECHNIQUES

In order to optimize the memory requirement and efficiency, sequential pattern discovery using class decomposes the original lattice what we can called as original search space into smaller sub spaces. This process can be done independently in the primary memory.

The key idea of decomposition is a equivalence relation, in which the list of sequence are distinct and they share the same prefix. It is quite convenient to see that, for a fixed value of length, say k, en equivalence relation can be defined as W_k. This relation induces a partition on the set of sequences and each equivalent class is to be treated as a sub lattice in this structure.

First of all, we can solve the sequence mining problems and send it to the other techniques for the execution. In order to solve {A}, we may have to solve {AB}, {A→B}, etc. and at the same time, should not go more than three level deep search in the recursion process. Because there may be the possibility of Performance overhead problem, if repeated db scan performs.[2]

In most cases, the size of the sub program rapidly decreases and it becomes very small, so that it can able to handle in the main memory. Always it begins from the bottom elements of this lattice and move in a upward direction either in Breadth first or Depth first manner.

This bottom up movement is carried out by incrementing k by 1 at every step and at every iteration pruning takes place. It appears to be an efficient method for frequent pattern mining. But when we take huge elements in the dataset while online shopping cart, the result is not to be accurate as determined because we expect only good and interesting relevant data rather than uninterested failure data. So in order to overcome the drawback, the frequency patterns can be identified using GA.

4. GA METHODOLOGY

GA executes in a package of separate elements or items what we can term as population. The Genetic algorithm maps strings of numbers to each potential solution. Each and every solution becomes an individual in the population and each string becomes a representation of an individual.

Genetic Methodology works in a cyclic model:

In the cycle, the first one represents the population.

That is Creation and Evolution of Population of strings

Apart from the First cycle, in a consecutive next stage, the individuals were analysed, and the corresponding descriptions are given, then its performance is to be evaluated which is correlated to the same kind of population.

4.1. Mutation

While invoking the algorithm, a new block of useful data have been formed in population. Since the modification is totally random, it creates different structures. We can able to pick the appropriate one from the list of different structures based on complexity.

5. CONCLUSION

While handling the larger data sets, in order to overcome the drawback of performance bottleneck, we proposed the concepts using genetic algorithm by optimization technique. Hence it can be used for online shopping with accuracy of handling big data and overall performance gets improved.

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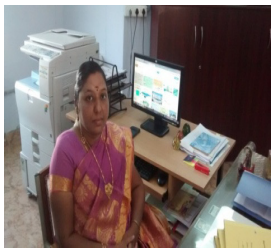

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