

Temporal Data Mining is the process of Knowledge Discovery in Temporal Databases that discovered temporal patterns over the temporal data. Association Rule Mining is applied on temporal data and temporal patterns are discovered.

Incremental association rule mining process will apply on incremental data and generated data will stored in intermediate data, for making these two Incremental Temporal Pattern Miner (P-TPMiner) and Incremental Probabilistic Temporal Pattern Miner (P-TPMiner) algorithms in terms of incremental temporal mining. This Incremental association rules mining process will produces updated pattern based on available knowledge (obtained from mining of previously Intermediate stored data) and original pattern.

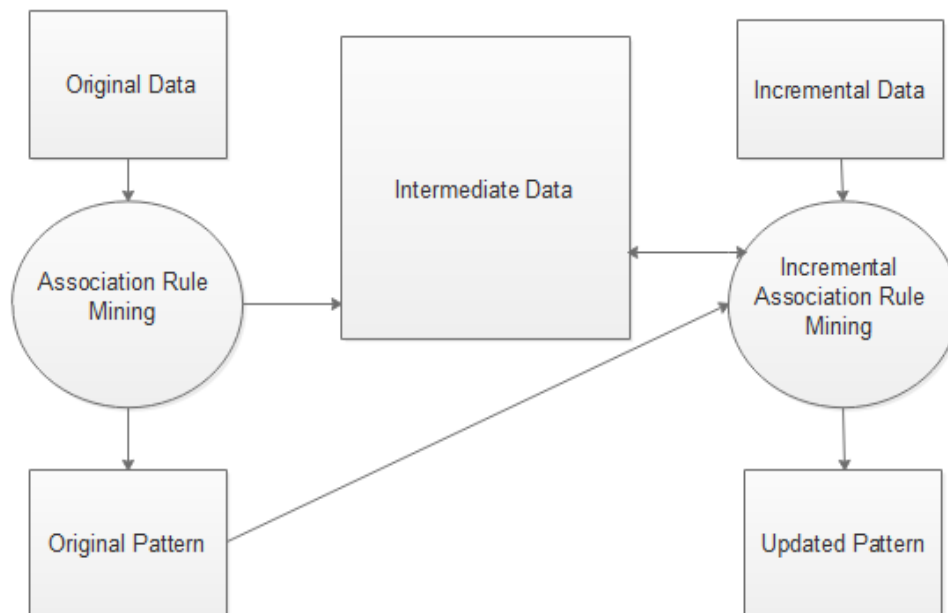


Figure 1.1 Proposed System flow of Incremental Temporal Mining

The incremental mining algorithm uses incremental mining technique is to re-run the mining algorithm on the only updated database. We have proposed these two algorithms TPMiner and P-TPMiner in restartable mode. Restartable mode can pick up where it left off rather than re-copying the entire system. Re-running the temporal mining algorithm every time is inefficient since it ignores previously discovered patterns and repeats the work done previously.

Incremental mining algorithms can significantly increase the speed of a task because much of the work that was performed for previous tasks can be reused in successive tasks. Since Incremental mining algorithms have more speed than non-incremental mining algorithm.

Non-Incremental temporal mining which deals to those that need to process all items in each iteration of an iterative procedure for refining a final solution.

Consider the Test Scenario shown in Figure 1.2

TestCase_ID	TestCase_Name	Action(Chosen by user)	Steps	Activity	Expected Results	Actual Results	Status
1	Upload a dataset file	Browse the dataset file	step1	Choose a dataset file with .csv	File Uploaded successfully	As Expected	Pass
2	User visits TPMiner	Clicked	step2	Enter Min_Threshold	Algorithm runs successfully and generated temporal patterns	As Expected	Pass
3	User visits P-TPMiner	Clicked	step3	Enter Min_Threshold and Min_Probability	Algorithm runs successfully and generated temporal patterns	As Expected	Pass

Figure 1.2 Test Scenario

**Test Case 1:** You have to first browse the Dataset file.

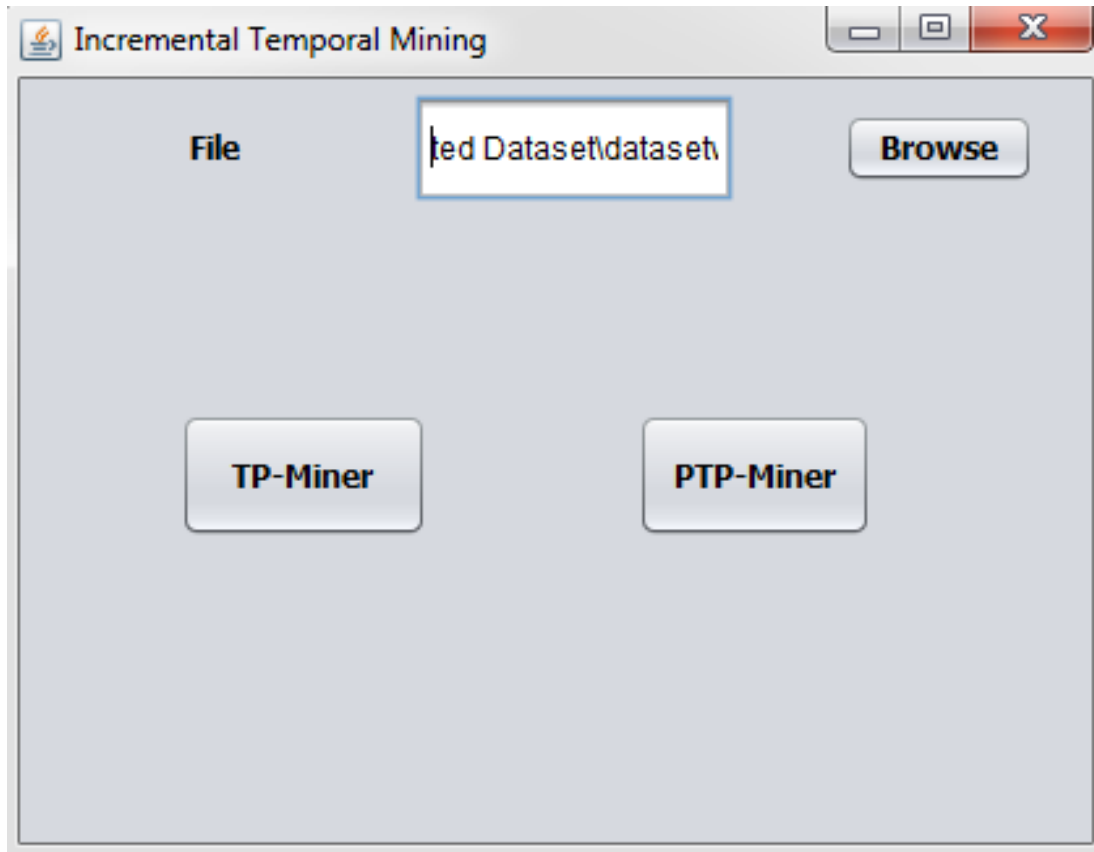
**Test Case 2:** If user chosen TP-Miner algorithm then Enter Minimum Support Threshold and MaxitemSize. Now run the TP-Miner algorithm. It will display number of temporal patterns are generated in output.

**Test Case 3:** If user chosen P-TP Miner algorithm then Enter the Minimum Support Threshold ,Minimum Probability and MaxitemSize. Now run the TP-Miner algorithm. It will display number of temporal patterns are generated in output.

## Screenshot

Following snapshots illustrates the results achieved following snapshots illustrates the results achieved. First screen shown in Snapshot 1.3.

- You have to first browse the Dataset file.
- Choose which algorithm you want to run.



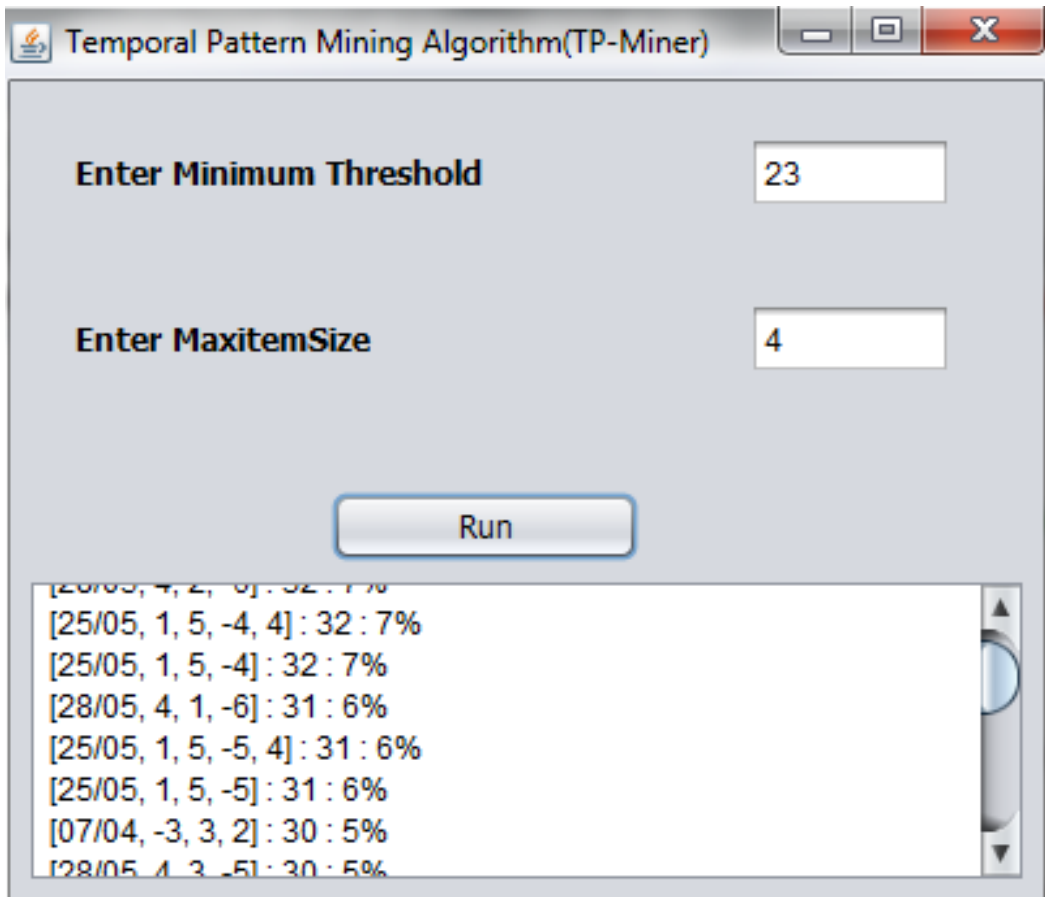
Snapshot 1.3 Home

Here, we chosen TP-Miner algorithm as shown in Snapshot 1.4.

- Now Enter the Minimum Support Threshold and MaxitemSize.
- Hit run the TP-Miner algorithm.
- It will display number of temporal patterns are generated in output.

Below Output shows that patterns are discovered with date, support count and percentage.

- Date is the day of month year.
- Support count is frequency of occurrence of an Itemset.
- Percentage is a rate in hundred.



Snapshot 1.4 TP-miner

Here, output shows that,

- On particular date particular patterns are generated with its support count.
- Percentage shows that chance of getting that percentage this pattern on that date in next couple of years.

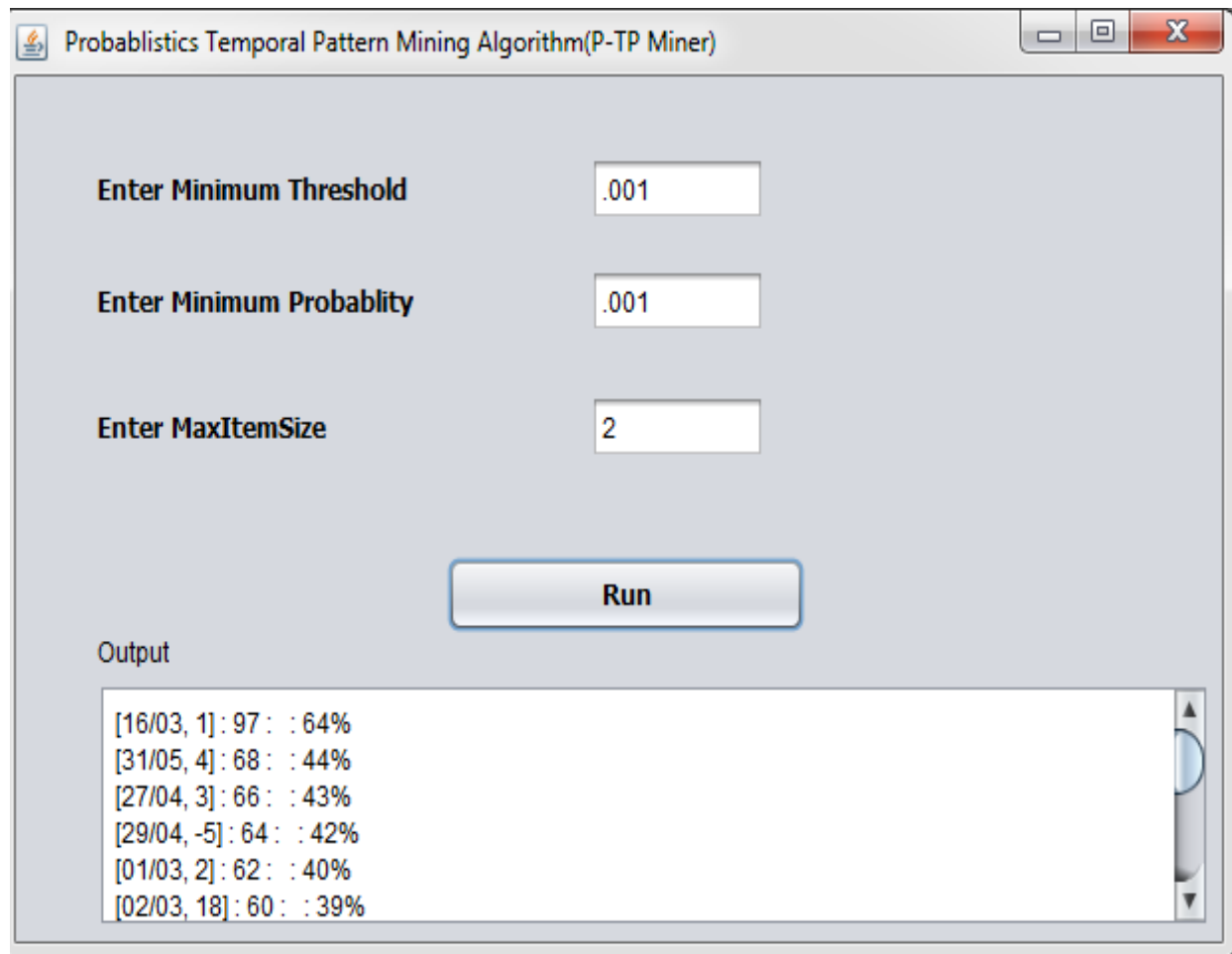
It will display number of temporal patterns are generated in output. Outputs are vary when datasets are varies.

Here, we chosen P-TPMiner algorithm and in Snapshot 1.5 as shown in below.

- Now Enter the Minimum Support Threshold, Minimum Probability and MaxitemSize.
- Hit run this P-TPMiner algorithm.

It will display number of temporal patterns are generated in output. In Snapshot 1.5 Output patterns are discovered with date, support count and percentage.

- Date is the day of month year.
- Support count is frequency of occurrence of an Itemset
- Percentage is a rate in hundred.



Snapshot 1.5 P-TP-miner

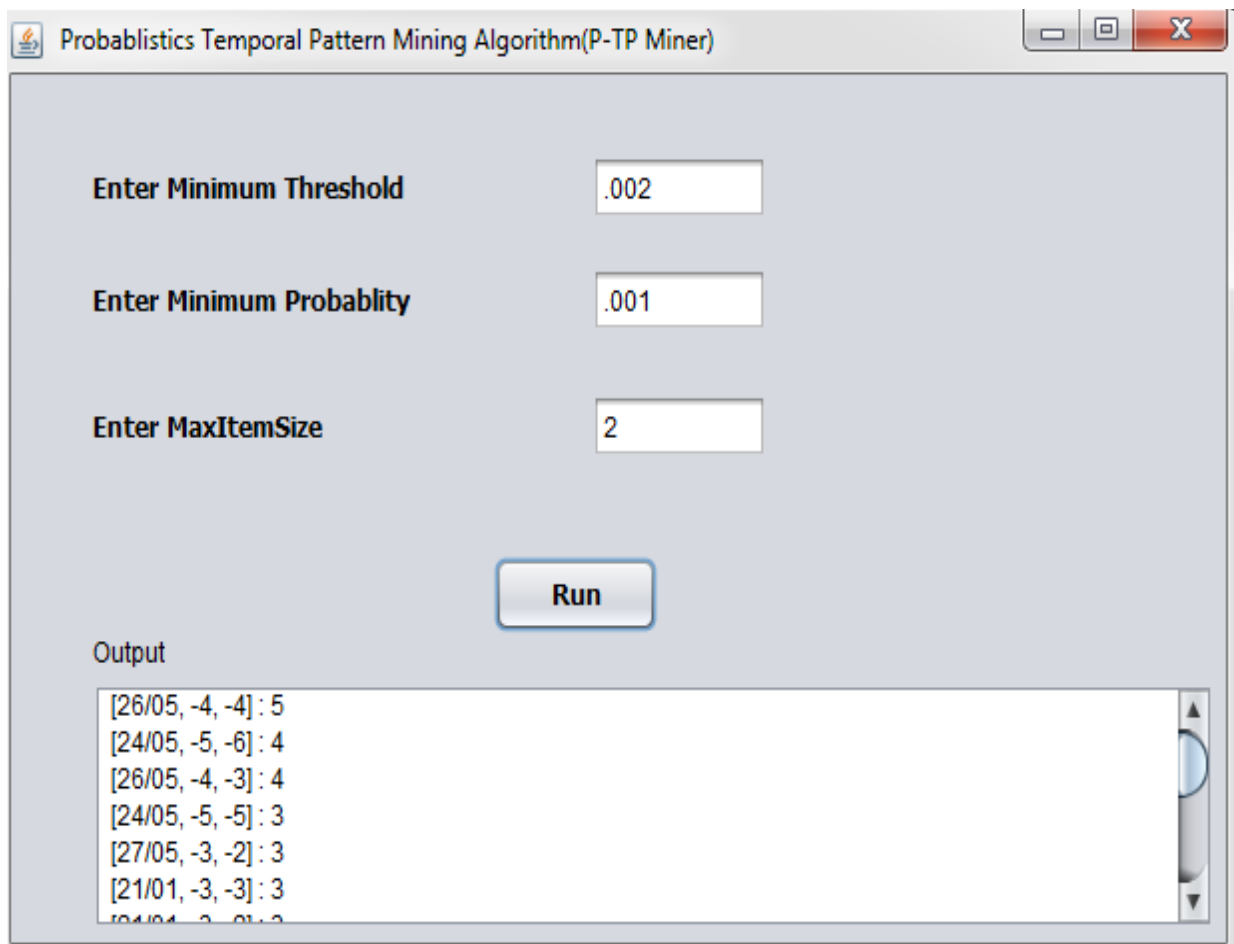
Here, output shows that,

- On Particular date particular patterns are generated with its support count.
- Percentage shows that chance of getting that percentage this pattern on that date in next couple of years.

Now we have taken different Minimum Support Threshold, Probability and MaxitemSize in Snapshot 1.6 as shown in below.

- Run the P-TPMiner algorithm.

It will display number of temporal patterns are generated in output.



Snapshot 1.6 P-TP-miner

On temporal datasets we performed testing by giving different minimum support threshold and result is compared with exiting temporal mining algorithm .It shows the following result as shown in Figure 1.7.On the basis of below chart, we can say that incremental temporal algorithm performs better than non-incremental temporal algorithm in Figure 1.7. We have tested the performance of incremental temporal mining as compared to non-incremental temporal mining.

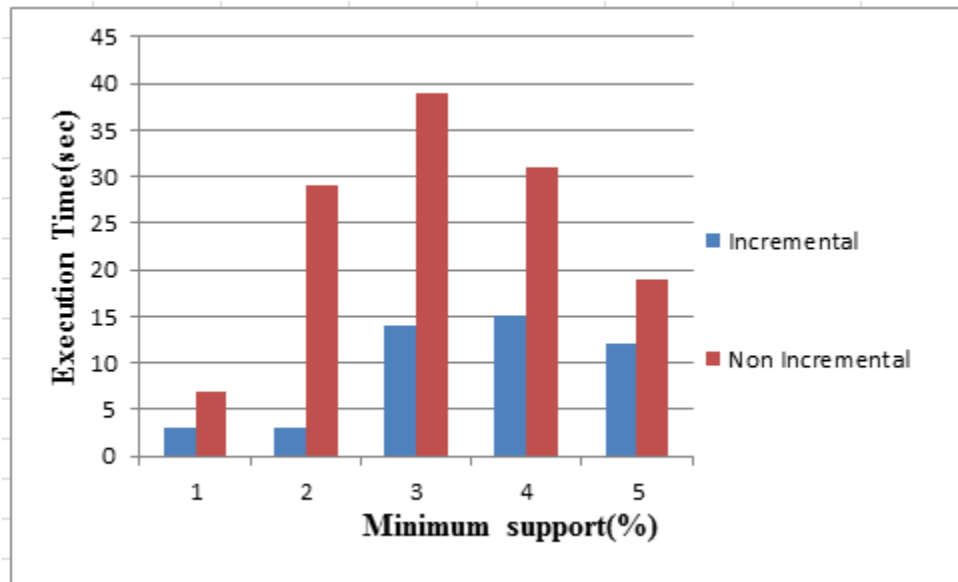


Figure 1.7 Result Analysis(Incremental and Non-Incremental)