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Recommendation System for Voters using Classifier Rule

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Abstract: ***Recommender System gives suggestions based on the user's preferences and features of items. Ultimately its performance and efficiency depends on these factors and their representations. It also reduces the uncertainties by displaying item features. Here fuzzy logic in the recommendation system plays vital role to handle uncertainty. Fuzzy logic helps the user to provide most proper information related to the model. The multiple opinions from the user are taken on the basis of Voters database to take appropriate decision. In the proposed system classification of the database is done with the help of rules of decision tree and PART in which all the attributes are included whichever given. Comparison between these proves that PART works more efficiently than that of rules of decision tree.***
Keywords: Recommendation system for voters, Rules of decision tree, PART

I. INTRODUCTION

Recommender System is widely used in various applications. The reason behind is that provision of products information to the customer and suggest them suitable product according to their expectation. Ultimately the browser information is converted into buyer and improve the sell by suggesting other products to the user for purchasing. The recommender system recommends a product based on the sellers from a website or from the past history of customer buying behaviour. Identification of user's preference suggest product purchase that fit for user preference with the help of recommendation system. Most of the recommender system works on the similarity between user's interest and product characters. Due to this usefulness some information ignored and give some unjustifiable inferences.

II. LITERATURE SURVEY

1) Recommendation system gave suggestions to the user to take proper decision. The broadly classified recommendation classes such as Collaborative Filtering, CBF with user based and item based concept. In this paper evaluation metrics is generated in online and offline mode as well. Also observed that in recommendation system, user satisfaction might depend not only on accuracy but also on factors such as privacy, data security, diversity, serendipity, labeling, and presentation.

2) In Big data, different types of recommender system are available. But context awareness of technologies and social changes which behaves intelligently plays vital role in recommendation system. So necessity of hybrid model is required. The author applied business intelligence concept to the recommendation system for intelligently responding to user's changes and business complexities. This BI based framework adopted hybrid methodology for RS for focusing on the enforcement of the RE performance. By implementing On Line Analytical Processing(OLAP) tools, Business Intelligence Recommender System(BIRS) monitored the performance using data mining techniques of BI to enhance its own learning user profiling. Prediction model is used for making better personalized recommendation to its user.

3) Recommender system filters the items features and maintains user profiles on the basis of past purchase information and buying patterns. With this analyzation, optimal prediction is possible. In this paper author focuses on the fuzzy logic to design recommender system which is useful in ecommerce to suggest product or items to customer as their interest. Fuzzy rules help to module vagueness, handles user demographic data and improves the determination of similar users as well.

4) Here the author focused on the novel recommendation to utilized the knowledge from the repository on the basis of item property and users behaviour. With the help of formal concept Analysis and extended inference, the recommendation system is provided by defining user profile and item profile. Due to unstructured form of product data, the main focus is on identifying the relevant information sources by automated extraction of product data and deletion of outdated product data. Customer requirement accuracy can be increased if knowledge formalization concept is used with the product information. The formalization also helps to increase the intelligibility of items knowledge representation. It also helps in faster discovery of a candidate set of items for searching the user's interfaces. The formalized model has components like knowledge source ontology, user profile ontology and FCA ontology. The mapping domain between attributes provides extraction of information

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from their various domain and speed up the choice process of candidate recommendation set. The recommendation stereography is divided into two types instant satisfaction and extended inference. The FCA solves the problem more flexibly then content based and collaboration filtering. Ultimately efficiency is increased with FCA.

5) Item Based CF techniques solves the issues of high quality recommendation for high scale problems. IBCF identify the relationship between different items and user to compute the recommendation of user. The IBCF focused on the scalability of data and quality of data. By utilizing Movie lens dataset, IBCF algorithm is implemented. IBCF gave good quality of recommendation than other user based algorithm on high scale data. Sensitivity of model size is checked by verifying response time and throughput.

6) The author concentrates on the voter decision making by providing information like voter's preferences tendendancies where recommendation system is designed for e-Election using Fuzzy clustering methods. In this paper, fuzzy e-election recommender system is generated on the basis of most similar candidates. Fuzzy recommendation system is implemented for e-Election which is used by the voters. This system establishes the preferences and tendencies of the candidates which is utilized after voting election process for establishment of new elected authorities.

III. RELATED WORK

Recommendation System is developed on the basis of dataset. So firstly dataset is prepared or collected. After collection of dataset, find out all the features used for recommendation system. There are near about 17 attributes in the voter dataset. By considering all the attributes, classification of the dataset takes place with the help of Decision tree and PART for 435 instances. The dataset is divided into two parts that is training dataset and testing dataset. Training dataset is trained on machine learning algorithm and test with the help of classification algorithm. Once training dataset is trained with classification which gives result of Decision Tables and PART.

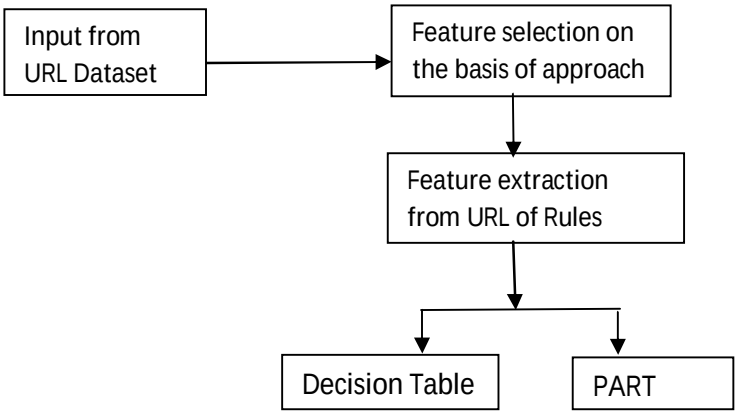


Fig. 1: Rule Based Classification

IV. RESULTS

1) Rules apply on decision table of cross validation with 10 folds' data and 66% split gives 96.6 true positive result with all parameters in fig 2

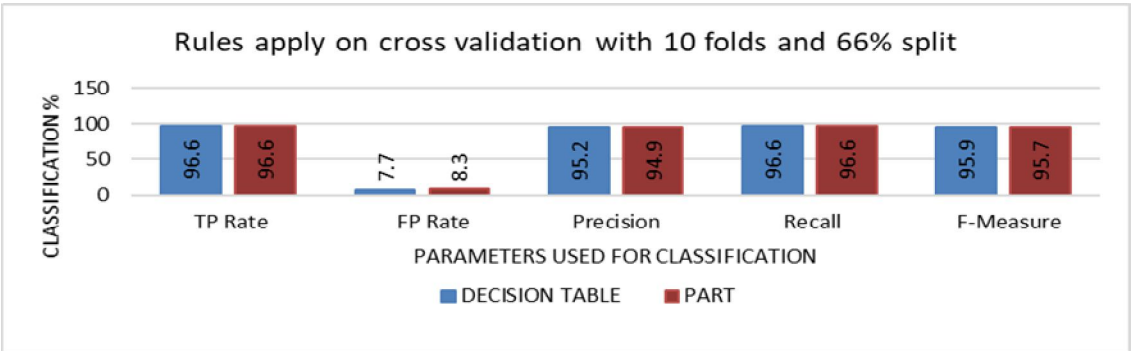


Fig. 2: Rule based classifier applied on cross validation with 10 folds and 66% split data

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2) Rules apply on decision table of cross validation with 15 folds' data and 66% split gives 95.9 true positive result with all parameters in fig 3

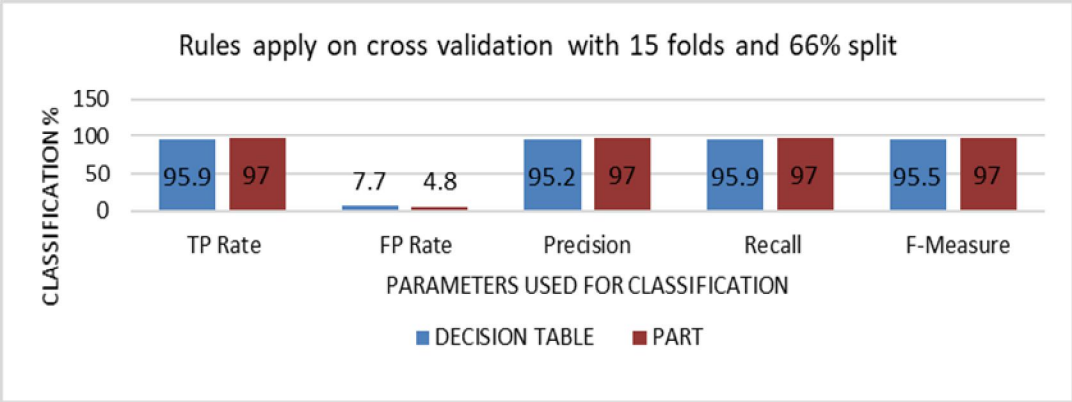


Fig.3: Rule based classifier applied on cross validation with 15 folds and 66% split data

3) Rules apply on decision table of cross validation with 20 folds' data and 66% split gives 95.9 true positive result with all parameters in fig 4

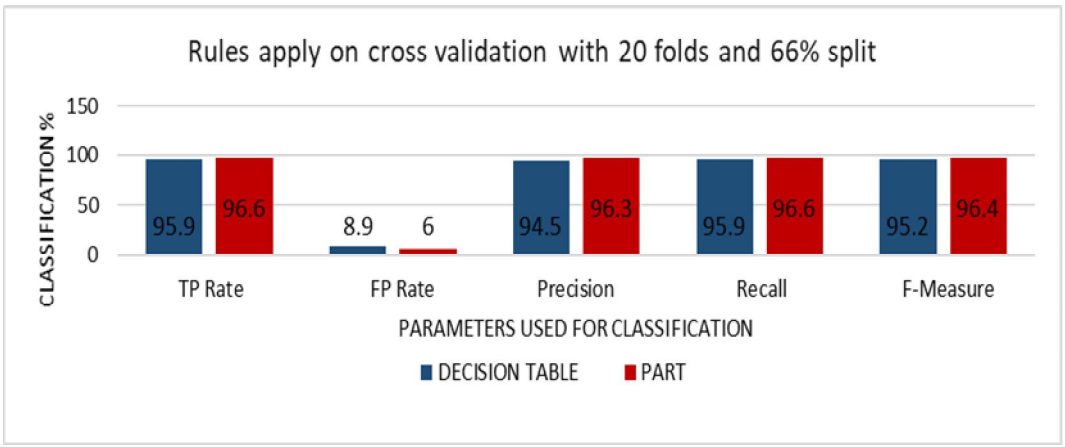


Fig.4: Rule based classifier applied on cross validation with 20 folds and 66% split data

4) Rules apply on decision table of cross validation with 20 folds' data and 75% split gives 95.1 true positive result with all parameters in fig 5

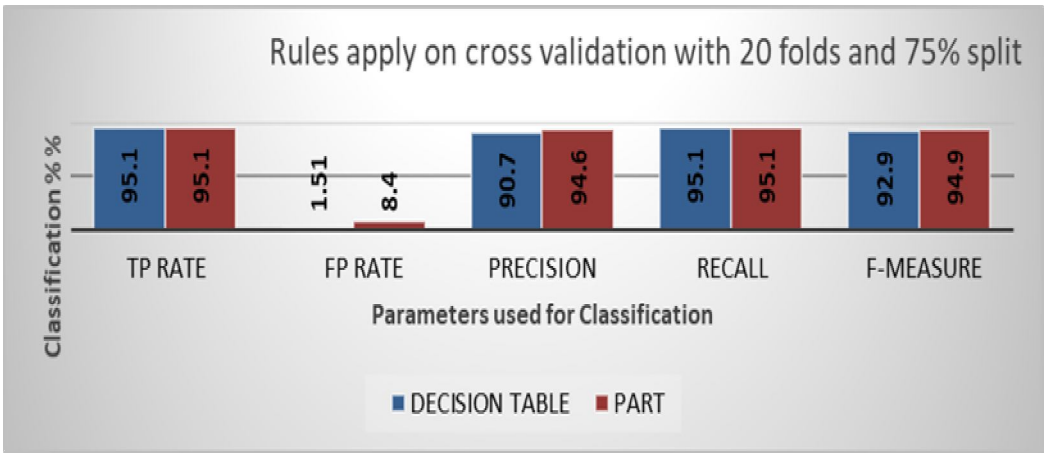


Fig.5: Rule based classifier applied on cross validation with 20 folds and 75% split data

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5) Rules apply on decision table of cross validation with 20 folds' data and 30% split gives 95.1 true positive result with all parameters in fig 6

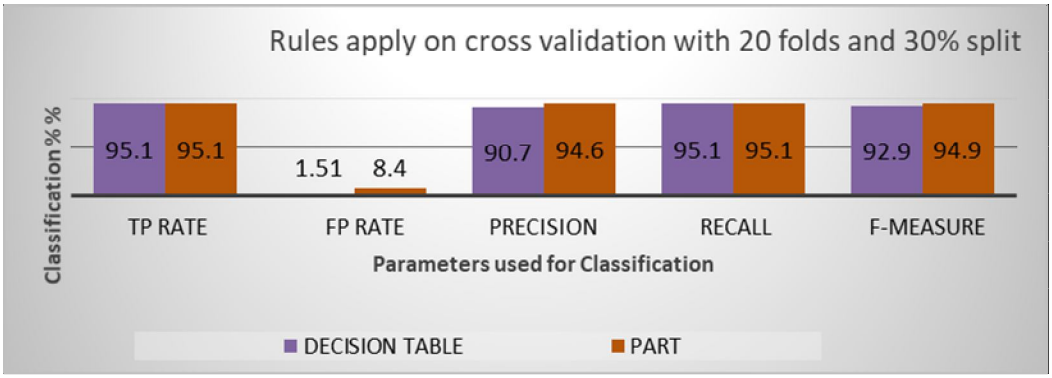


Fig.6: Rule based classifier applied on cross validation with 20 folds and 30% split data

6) By applying rules of decision table and PART it is observed that with different folds of data with varying splits PART classified instances more correctly than that of decision table as shown in fig 7 means PART gives better True Positive result as compared to Decision Table.

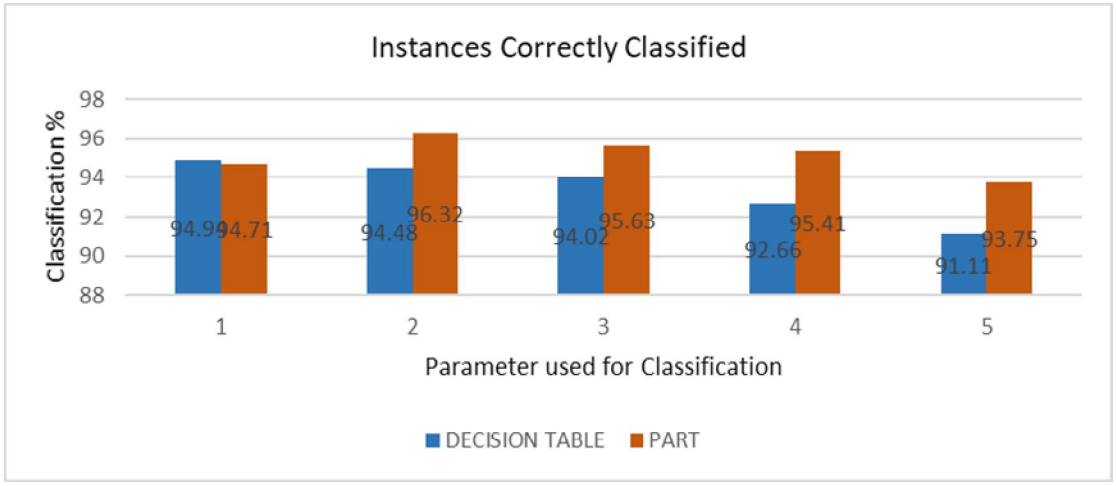


Fig.7: Correctly Classified Instances with Decision Table and PART

7) By comparing the built in time required for classification using decision table and PART, it is observed that PART classifier requires less built in time than that of decision table.

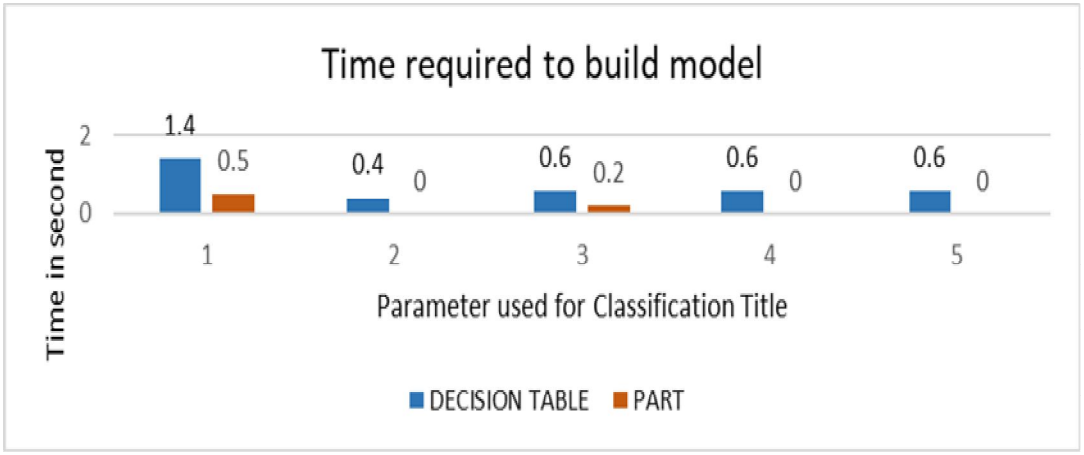


Fig 8: Time required to build model

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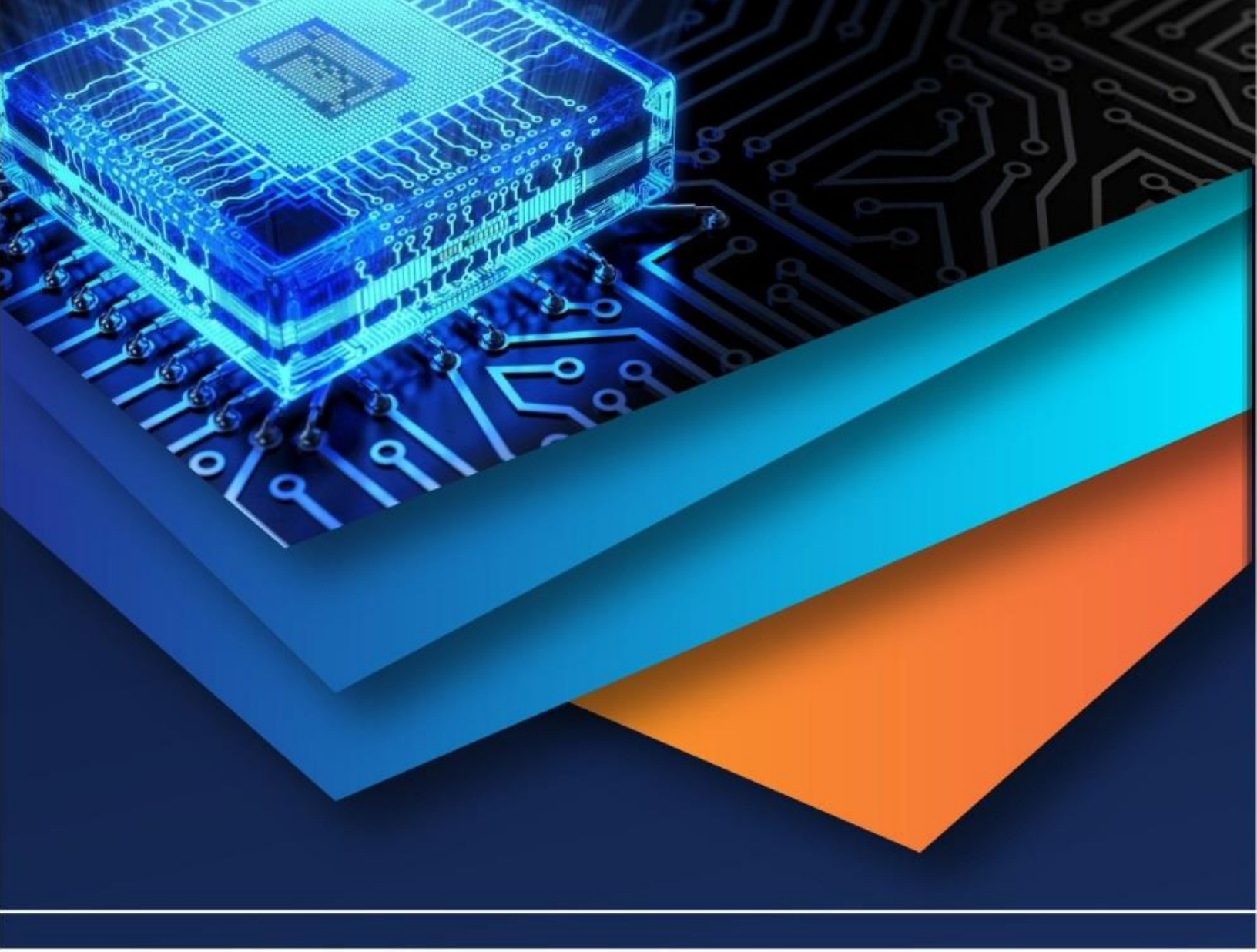
V. CONCLUSION

Recommendation system for voters is implemented by using WEKA tools. The voter's dataset is utilized for recommendation system in arff format. From the implementation it is concluded that build in time required for classification using rule based indirect method, PART is low as compare to that of decision table rules. Also PART classified more instances correctly than that of decision table. Recommendation with PART is more efficient for giving proper decision on the basis of classification and time requirement.

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