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Hospital Medicine Classification using Data Mining Techniques

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ABSTRACT

Data mining is a process which finds useful patterns from large amount of data. This paper is analyzing decision trees technique using the medicine data from central medical store, department of health. The results are support to best solution to share many type of medicine for manager at Central Medical store. This Central Medical store is supporting medicine to hospitals from upper Myanmar.

KEYWORDS: *Data mining, Decision Trees*

1. INTRODUCTION

Data mining techniques and algorithms such as classification, clustering, etc, helps in finding the patterns to decide upon the future trends in businesses to grow. Data mining has wide application domain almost in every industry where the data is generated. That's why data mining is considered one of the most important frontiers in database and information systems and one of the most promising interdisciplinary developments in Information Technology. Data mining is a business process for exploring large amounts data to discover meaningful patterns and rules large amount of data in a computer system are often required to receive that data rapidly in a variety of sequences and combinations. Problems often result with this system whether the system uses a database of individual files, because the ways in which individual data items are stored within the computer system do not reflect the underlying structure of data that exit in the business world.

This system is developed to provide the procedure for the Central Medical Stored sub-deport from Department of Health. Central Medical Stored sub-deport is deliver medicines to hospital from upper Myanmar. It has many kinds of medicines for many types of patients at hospital. Medicine delivery has two types. These are ordinary and special case of deliver. Ordinary deliver has one or twice per month for consider medicines. Special case depends on saturation of case i.e special disaster, epidemic disease, and special disease case.

2. Background of the system

2.1. History of C.M.S.D [Mandalay]

History of C.M.S.D [Mandalay] is the following:

- Old C.M.S.D [Mandalay] location on 73rd street, between 27th and 28th street, Mandalay
- Date of opening and duration :-1.10.1968 to 30.10.1993, {25years}
- Ownership:- Ministry of Co-operative
- Present C.M.S.D [Mandalay] 1993- Granted from government and construction began
- Location:- On 62nd street, between 38th and 39th street, Maha Aung Myae township, Mandalay
- Beginning of service: - 6.12.1993
- Area of new location: - 8.7742 Acre.

2.2. Function of C.M.S.D [Mandalay]

1. Indent Medical Supply from Yangon C.M.S.D.
2. Storage of Medicine and Medical requirements for distribution.
3. Storage for transit.
4. Distribution of Medicine and Medical requirement [Indenting System].
5. Notice by mail or telephone or telegram to respective township or Hospitals to get medicine or transit medical supply]

3. Related Work

In [2], author has used the database of an Electronic store to see whether a person buys a laptop or not with decision tree algorithm. There are class-labeled training tuples from the electronic store. Each attribute taken is of a discrete value. The class-labeled attribute buys _laptop, has two distinct values (yes, no). The database of Electronics store shows that the attribute age has the maximum or highest Information Gain and that the age attribute also has the minimum Gini index, therefore, resulting in a maximum reduction in impurity of the tuple in this. By taking age as the splitting attribute. In [4], Author use Weka tool to demonstrate the experimental results of the dataset with 10- fold cross validation .The datasets are collected from UCI / KEEL repositories to test the accuracy of ID3 and C4.5 classifiers. WEKA is a machine learning that supports many algorithms of data mining. The tool is programmed in Java language with GUI for interacting with data files in additional to produce visual results. The following table shows the characteristics of selected datasets with nominal attributes and no missing values. We can handle other features of datasets that contain

both continuous and discrete attributes with missing values. Whereas the ID3 algorithm cannot handle these features by using unsupervised discretization to convert continuous attributes into categorical attributes and pre-processing to replace the empty cells.

4. Use of Methods

Most data mining techniques have existed, at least as academic algorithms, for decades the oldest, survival analysis, actually date's back centuries. Data mining has caught on in a bit way, increasing dramatically since the 1990s.

Decision trees are one of the most powerful directed data mining techniques, because we can use them a wide range of problems and they produce models that explain how they work. Decision trees are related to table look up models. Decision trees extend idea in two ways. First, decision trees recursively split data into smaller and smaller cells which are increasingly 'pure' in the sense of having similar values of the target. The decision trees algorithm treats each cell independently. Second, the decision trees use the target variable to determine how each input should be partitioned. In the end, the decision trees break the data into segments, defined by the splitting rules at each step.

A model that can be expressed as a collection of rules is very attractive. Rules are readily expressed. A decision tree is a hierarchical collection of rules that describe how to divide a large collection of record into successively smaller groups of record.

Decision trees may be n-ary, n>=2. There is a special node called root node. All nodes drawn with circle are called internal nodes. All nodes drawn with rectangle boxes are called terminal nodes or leaf nodes. Edges of a node represent the outcome for a value of the node. In a path, a node with same label is never repeated. Decision tree is not unique, as different ordering of internal nodes can give different decision tree.

5. Function of Decision Trees for C.M.S.D [Mandalay]

.Matrix of
Supplementary

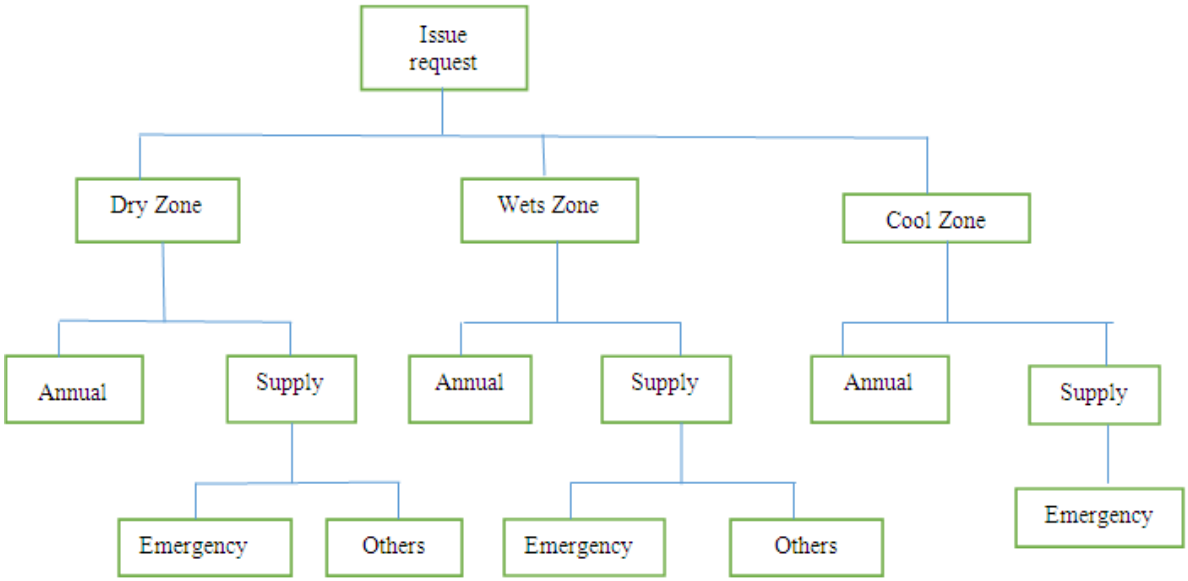
Division State	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar
Mandalay			*	A	A			*	S	S		
Sagaing					*	A	A			*	S	S
Magwe	*	S	S				*	A	A			
Kachin		*	S	S					*	A	A	
Chin				*	S	S				*	A	A
Shan[North]	*	A	A			*	S	S				

***Indent, A Annual, S Supply**

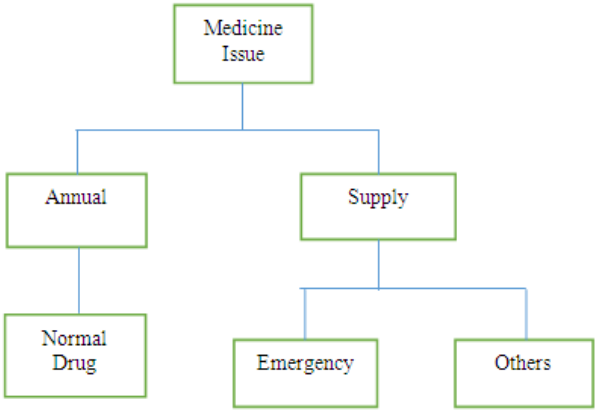
Starting the system, entry item can be used to input the Hospital name, Division, City, Township, Village and level of Hospital. The user selects item sub-menu, then input form will be appeared. If new records append the table, choose to edit or update require hospital information choice. The user received the medicines from central medical stored to warehouse by entire his drug type. User must choose Division or State during the period by Annual or Supply, system accept the request form. But the request period is not arrived, system refuse the request form by the message.

If the case of Emergency are [floating, fire, diseases, etc.] user can request from Emergency Medicine. If Annual or Supply are issued by drug type, if duration time, accept the request form. If not the duration time, refuse the request form. If user requests the Emergency Medicine, issue form will appear, and then user can choose the entire drug type. Issue form item consists of [Injection, Liquid, Tablet] and others.

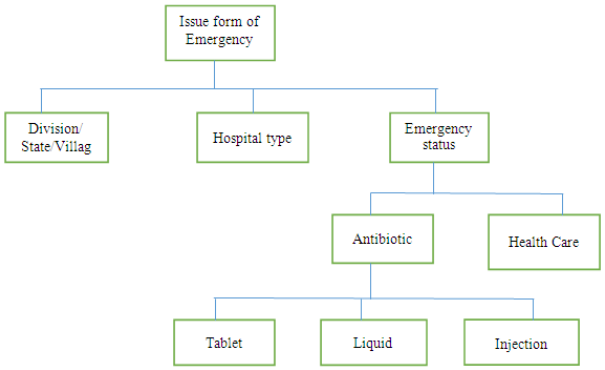
Issue form



Request form of medicine



Issue of Emergency Medicine



6. Conclusion

Data mining has importance regarding finding the patterns, forecasting, discovery of knowledge etc, in different business domains. Medical research and practice are the important areas of application for decision tree techniques. Decision tree is most useful in diagnostics of various diseases and also use for Heart sound diagnosis.

The efficiency of various decision trees can be analyzed based on their accuracy and time taken to derive the tree. This paper provides students and researcher some basic fundamental information about decision tree, tools and applications. This paper is analyzing the classification of medicine record used decision methods. These are support to valuable information for manager and staff of that department.

7. References

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