

Bayesian Belief Network to Predict Students Hallticket Received or Not Using Genie Software

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Abstract:

Bayesian belief network deals with probabilistic events to solve a mathematical problem which has uncertainty. It comprises of a set of variables and conditional dependencies using acyclic graph. It uses probability models to predict a certain event. A study and survey was conducted from first year M.C.A students to fill the form which contains register number, name, semester subjects, Exam Fees Paid or Not and their attendance percentage, after collecting the data, the data is preprocessed and the final data without any error is considered for the analysis. After careful evaluation of the data the software was selected and uploaded the preprocessed data for analysis and predict whether the student received hall ticket or not based on attendance percentage and Exam Fees .

Keywords — Bayesian Belief,Predict,Genie,algorithms.

I. INTRODUCTION

Over the last decade, the Bayesian network has become a popular representation for encoding uncertain expert knowledge in expert systems. More recently, researchers have developed methods for learning Bayesian networks from data. The techniques that have been developed are new and still evolving, but they have been shown to be remarkably effective for some data-analysis problems. In this paper, we provide a prediction of hall ticket using Bayesian network and associated Bayesian techniques for extracting and encoding knowledge from data. There are numerous representation available for data analysis, including rule bases, decision trees, and artificial neural networks; and there are many techniques for data analysis such as density estimation, classification, regression, and clustering. In this paper, we provide a prediction of hall ticket using Bayesian network

and associated Bayesian techniques for extracting and encoding knowledge from data. It explains about the hall ticket survey whether students receive hall ticket or not and how many percentage students has to get the hall ticket using conditional probabilities and dependent variables using Bayesian belief networks.[2]

II. LITERATURE REVIEW

- [1] Rupesh Agrahari, Amir Foroushani (2018): This paper analyse on application of Bayesian network models in predicting types of hematological malignancies.
- [2] Jie Cheng, Russell Greiner, Jonathan Kelly, David Bell, Weiru Liu (2001): This paper analyse learning Bayesian network from data.
- [3] Pedro Larranaga (2014): This paper analyse the Bayesian Network in neuroscience.

III. PROBLEM STATEMENT

1. To predict whether the student will receive hall ticket based on based on independent variables

IV. OBJECTIVES OF THE STUDY.

1. To study the interactions between dependent and independent variables in the study.
2. Fees Paid, Attendance Percentage are independent variable and Hall ticket is the dependent variable.
3. Based on the above parameters the data collected from the student will be uploaded in the Genie software whether the student will receive the hall ticket or not.

V.SCOPE OF THE STUDY.

The study entitled “Bayesian Belief Network predicting student hall ticket received or not based on the dependent variables (Fees Paid and Attendance Percentage).

VI. MATERIALS AND METHODS

The data collected from I M.C.A students of Computer Science and Applications department which was uploaded to build the model using GeNie Modeler software to assign the value for the node and predict whether the student will receive hall ticket or not.

Student ID	Fees Paid	Attendance Percentage	Hall Ticket
10101	1	85	1
10102	1	75	1
10103	1	65	1
10104	1	55	1
10105	1	45	1
10106	1	35	1
10107	1	25	1
10108	1	15	1
10109	1	5	1
10110	1	0	1
10111	0	85	0
10112	0	75	0
10113	0	65	0
10114	0	55	0
10115	0	45	0
10116	0	35	0
10117	0	25	0
10118	0	15	0
10119	0	5	0
10120	0	0	0

Figure-1: Data Collection from I M.C.A Students

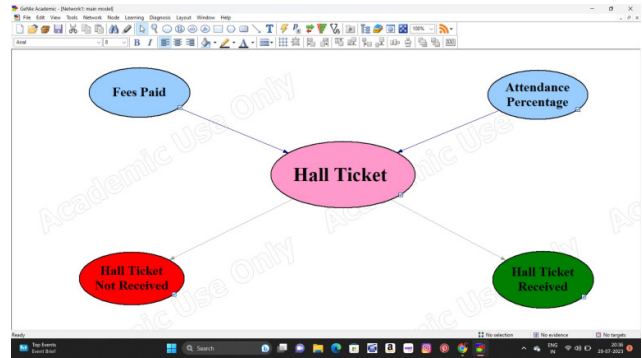


Fig-2: Model of Hall Ticket with associated attribute

Bayesian Network can be used for building models from data and experts opinions, and it consists of two parts:

- Directed Acyclic Graph
- Conditional Probabilities

Arc or Directed Arrows : Represent the causal relationship or conditional probabilities between random variables. These directed links or arrows connect the pair of nodes in the graph. These links represent that one node directly influence the other node, and if there is no directed link that means that nodes are independent with each other.

Conditional Probability : Conditional Probability is defined as the likelihood of an event or outcome occurring, based on the occurrence of a previous event or outcome. Conditional probability is calculated by multiplying the probability of the preceding event by the updated probability of the succeeding, or conditional, event.

VII. MODELING AND ANALYSIS
Prediction of Hall Ticket and Bayesian Network

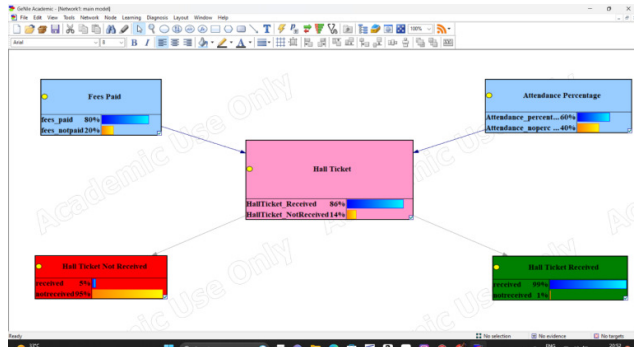


Fig -3: Bayesian Belief Model with Percentage Bar Chart hall ticket depending on Fees Paid and Attendance Percentage.

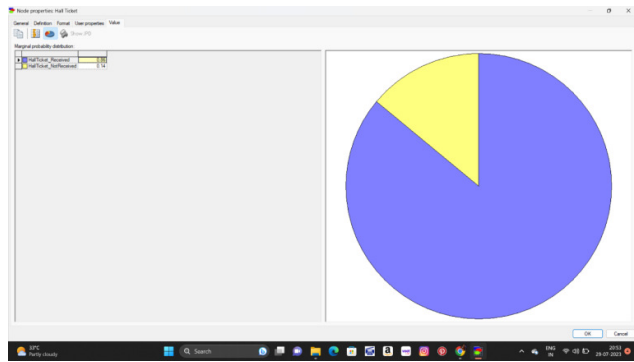


Fig-3: Result of Hall Ticket Received or Not based on Fees Paid and Attendance Percentage

Conditional Probability Table For Fig-3 as given above

Particulars	Probability Values
Fees Paid	80%
Fees Not Paid	20%
Attendance %	60%
Attendance Less Percentage	40%
Hall Ticket Received	95%
Hall Ticket Not Received	5%

VIII. CONCLUSION

The purpose of the study is to predict hall ticket using Bayesian Network using dependent variables.

IX. REFERENCES

[1] Rupesh Agrahari, Amir Foroushani (2018): This paper analyse on application of Bayesian network models in predicting types of hematological malignancies.
 [2] Jie Cheng, Russell Greiner, Jonathan Kelly, David Bell, Weiru Liu (2001): This paper analyse learning Bayesian network from data.
 [3] Pedro Larranaga (2014): This paper analyse the Bayesian Network in neuroscience.
 [4] <https://www.bayesfusion.com/genie/> BayesFusion LLC Data Analytics, Modeling and Decision Support.