Artikel

**Expert System Selection Topics Thesis Title With Forward Chaining Method Web-Based**

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**ABSTRAK**

Expert Systems are computer-based applications that are used to solve problems as the expert thinks. Many college students majoring in Information Technology are difficult to get the thesis title topic even though it has been reading many journals and looking for some references. Therefore to make it easier college students, then the author wants to create an application where college students majoring in Information Technology can more easily get the thesis title topic so the work of thesis becomes more fluent and not obstructed. This app is web based. In system design, the author used several methods in his research that is method of Analyze, Design, and Implementation. Methods in the design of this expert system even this also used forward chaining method as tracking ahead and best first search method. And also using data collection method mean literature study and questionnaire from system that has been created. The result of Expert System of Thesis Title Topic Selection with Forward Chaining method web based expected to be useful and helpfully college students in getting the thesis title topic. Based on questionnaire that has been shared and filled, it can be said that the Expert System of Thesis Title Topic Selection with Forward Chaining Method Web Based is helpful and beneficial for the college students because it helps college students in getting Thesis Title.

**INTRODUCTION**

The development of technology today has a very big influence for the world of information technology, especially for students and workers even early childhood has been affected by advances in technology. Those who make the most of information technology today are referred to as modern society. The emergence of a variety of applications that provide options in improving the performance of a job, both desktop-based, web-based, until now the emergence of new applications that run in mobile phones / mobile phones. Many students majoring in Informatics Engineering are difficult in getting the topic for thesis title even though it has been reading many journals and looking for some references. Therefore to simplify student / i, hence writer want to make an application where student / i majors of Informatics
Engineering can more easily get topic for title of thesis so that workmanship of thesis become more smoothly and not hampered. For the method used in the manufacture of this expert system application, the use of forward chaining method, because this method performs processing that begins from a set of data until the optimal conclusion is found.

I. METHODS

Best First Search Algorithm Design
In research for this writing, the use of Best First Search (BFS) technique algorithm. The illustration in the picture below will describe the steps performed by the search technique Algoritma Best First Search.

![Image of BFS algorithm](image1)

Starting from node A which is a preliminary opening question in the expert system to determine the next step but depending on the answer to be selected between "Yes" and "No" which will determine where the next node goes, answer each question until the conclusion is found as in the node illustration D, E, F, G which is the result of the conclusion of each question or even another node as according to the rule base of the topic selection table of thesis title.

This first search (BFS) search technique has the advantage of making a quick decision-making process because it stops when a decision is made.

Forward Chaining Method
In this research also used the method of Forward Chaining tracking. The following illustration will describe the steps that must be performed with the Forward Chaining tracking method.

![Image of Forward Chaining method](image2)
The initial given only A, then start answering each answer question if the answer Yes then see in accordance with the knowledge base table, if appropriate it will start to R1 which means the first rule to node B, if the answer No it will go to node C which means third rule (R3). From node B if answer Yes will go to node E, but if answer No then it will go to node H which means second rule (R2). If from node E answer Yes it will go to node F where after choosing answer between Yes and No from question F will get conclusion result of answer from every question which result of answer is node G or I, but if after node A answer No it will entering the node C, as well as the node C if it answered No will go to node D which is the fourth rule (R4).

Tracking Techniques Forward Chaining method has the advantage if an application produces a tree width and not deep, it is better to use Forward Chaining method.

II. RESULT

In this study, the authors make the procedure on the expert as follows:

P = Question  T = Topic

Questions:
For questions using PXX code (XX as a sequence from the questionnaire):
P01 Creating a Website
P02 Website for company profile
P03 Website for sales
P04 Website for education
P05 Website for social media
P06 Website for information media
P07 Using PHP programming language
P08 Complete data for sales websites
P09 Complete data for educational website
P11 Complete data for information media websites
P12 Create a mobile app
P13 Game app
P14 Application for education
P16 Apps for news
P17 Applications for sales
P18 Using Java programming language
P19 Creating a Robot
P20 Create a sound sensor
P21 Create a mini computer tool
P22 Creating a temperature sensor
P23 Using PHP programming language
P24 Using Java programming language
P25 Already know the research method for mobile-based news app
P27 Already know the research methods for mobile-based sales applications
P28 Complete data for company profile website
P31 Have some reference titles for company profile website
P32 Complete data to create company profile website
P33 Sure still want to choose company profile website
P34 Have some reference titles for the sales website
P35 Sure still want to choose the sales website
P36 Have some references to educational website titles
P37 Sure still want to choose educational website
P38 Have some references to social media website titles
P40 Has some reference titles of mobile-based social media apps
P41 Have some references to media information website titles
P42 Sure still want to choose media information website
P43 Have some reference titles of mobile based gaming apps
P44 Know the research methods used in making game applications
P45 Sure you still want to choose a mobile based game app
P47 Knowing examples of mobile-based education apps
P48 Have some reference titles of mobile-based education apps
P49 Sure you still want to choose mobile-based education app
P52 Have some reference titles of mobile-based education apps using Macromedia flash
P53 Sure you still want to choose mobile based education app using Macromedia flash
P54 Have some reference titles of mobile-based news apps
P56 Sure you still want to choose mobile-based news app
P57 Have some reference titles of mobile-based sales apps
P58 Have some reference titles of mobile-based sales apps and their research methods
P59 Sure you still want to choose mobile-based sales app
P60 Creating sensor detection tool
P61 Has some reference to the robotics title of the sound sensor tool
P62 Know the programming language used in making robotics
P63 Sure you still want to choose to make a sound sensor tool
P64 Have some reference to the robotics title of mini computer tool
P65 Know the tools used to make mini computers
P66 Sure you still want to choose a mini computer tool
P67 Know the programming language that will be used in robotics
P72 Has some reference to the robotics title of the temperature sensor tool
P73 Know the programming language that will be used to create Robotic temperature sensor tool
P74 Sure still want to choose robotic temperature sensor tool
P76 Has some reference to the title of robotics sensor detection tool
P77 Know the programming language that will be used to make Robotics detection sensor tool
P79 Sure still want to choose robotics detection sensor tool

Topics:

For topics using TXX code (XX as a sequence from the topic list):
T01 Website Company Profile (company profile)
T02 Website Sales
T03 Education Website
T04 Social Media Website
T05 Media Information Website
T06 Game Apps
T07 Education Application
T08 News App
T09 Sales App
T10 Sound Sensor
T11 Mini computer
T13 Temperature Sensor
T14 Sensor detection
T15 Topic is not detected expert
III. DISCUSSION

Pic 3: Decision Tree

Pic 4: Decision Tree: 1
Pic 5: Decision Tree: 2

Information:

(arrow) = Yes  P = Question

(arrow) = No  S = Solution
IV. CONCLUSION

Based on the results of trials and evaluations that have been done then it can be concluded as follows:

1. Students can determine the topic title thesis by using expert system program topic selection web thesis title.

2. Forward Chaining Method that has been used by the author for the application can be used optimally by the students. The Forward Chaining method is chosen because it performs the processing that begins with answering each question.

REFERENSI


BIOGRAPHY

Ricky Tri Utomo Graduated in Informatics Engineering Study Program of Buddhi Dharma University (S1) in 2017.

Yo Ceng Giap Graduated in Informatics Engineering Study Program STMIK Buddhi (S1) in 2003, Informatics Engineering Program STMIK Eresha (S2) in 2010. Currently as a permanent lecturer in Informatics Engineering Program Faculty of Science and Technology Buddhi Dharma University.