Analysis of the Decision Tree Method for Determining Interest in Prospective Student College

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Abstract: Education is learning science, skills that are carried out by a person or a group of people. The education level starts from Elementary School Education, Junior High School and High School. Apart from that, the highest level of education is college. Lectures are further education carried out by people to gain knowledge and degrees. In college education everyone can choose their respective majors, according to their wishes and desires. With college education, there will be many prospective students who will go to college. But the interest of prospective students to study varies, there are some prospective students who want to study in public and there are some who want to study privately. Therefore the author will make research about prospective students' interest in college. This study aims to see the college interest of prospective students. For this research a data classification of prospective students will be carried out using the Decision Tree method. For this research stage using the Decision Tree method, the first is data analysis, then data preprocessing, then the Decision Tree method design and finally data mining testing. The classification was carried out using the Decision Tree method using 65 prospective student data. From the results of the classification using the Decision Tree method, the results of the Classification of prospective students who are interested in studying are 46 prospective students. The classification results above show that many prospective students are interested in studying.
Keywords: Confusion Matrix, Data Mining, Decision Tree, Orange, Tree Review

INTRODUCTION

Labuhanbatu Regency is the parent regency of the division of Labuhanbatu into 3 regencies, namely Labuhanbatu Regency, North Labuhanbatu Regency and South Labuhanbatu Regency. Labuhanbatu Regency has several campuses, namely Labuhanbatu University, Labuhanbatu Al-Washliyah University, Labuhanbatu Islamic University, and the Open University. Each campus has its advantages. All campuses in Labuhanbatu are well accredited, especially the Labuhanbatu University campus. Labuhanbatu University has several Faculties, namely the Faculty of Science and Technology, the Faculty of Teaching and Education, the Faculty of Law and the Faculty of Economics and Business. All study programs in each faculty at Labuhanbatu University have been accredited B and already have an undergraduate degree. Even though Labuhanbatu University is still a private campus, many Labuhanbatu Universities have graduated bright students. The material taught by the Labuhanbatu University campus lecturers is very good and easy for every student to understand. The Labuhanbatu University campus is located right in front of Suzuya Rantau Prapat, so it's no wonder that some students

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or students gave the nickname Labuhanbatu University UMSU (Muka Suzuya University) which means the Labuhanbatu University campus is located in front of Suzuya.

College is the upper level of education, because after college there is no more education to be carried out. Lectures have education levels, namely S1, S2, S3 and the last is professor. College is everyone's choice, they have the right to choose whether to go to college or not and they also have the right to choose a place where they will later study. For the study program, everyone has the right to choose. Everyone has their own choice. But in this discussion, we will conduct research on the interest of prospective students to study on campus in main Labuhanbatu, namely at Labuhanbatu University. We will carry out a Classification to group prospective students who are interested in studying at Labuhanbatu University.

Machine Learning is a learning tool by investigating a large level of knowledge.(Arowolo, Adebiyi, Ariyo, & Okesola, 2021) Machine Learning is also a field that is rapidly spreading into computer science, such as information security.(Ali, Yusro, Hitam, & Ikhwanuddin, 2021)(Adhinata, Ramadhan, Amrulloh, & Bahtiar, 2022) Our machine learning this time is for Classification in data mining.(Elmannai & Al-Garni, 2021) Machine Learning will later carry out the Classification process using certain methods.(Pattnaik & Parvathi, 2022) Machine learning will be used to build and present very significant points in data mining.(Ahmed, Hasan, Ali, & Mohammed, 2019) Data mining is a technique used to extract knowledge using statistical and mathematical techniques.(Uçar & Karahoca, 2021) Data mining is the process of collecting and classifying data according to certain probabilities. Data mining will later classify data according to certain groups. Classification is the process of grouping data based on certain categories. We will do the data mining using a decision tree algorithm. The decision tree method is a machine learning algorithm that uses a rule to make a decision with a decision tree structure that allows it to give a result.

METHOD

The decision tree method is a method used to make a decision based on a rule.(Alsaadi, Khlebus, & Alabaichi, 2022) This method is also called a decision tree.(Muñoz-Rodríguez, Alonso, Pessoa, & Martín-Lucas, 2023) This method will be used to classify data on prospective students who are interested in studying at Labuhanbatu University. The classification will later be carried out by using an application. The application is orange, which is a data mining application that is usually used to classify data according to certain categories. The classification process is used to identify sample data and data sets used in this study.(Binti Md Isa, Amir, Ilyas, & Razalli, 2019) The value of the sample data will determine the classification process using the decision tree method.(Redzuan & Yusoff, 2019) This decision tree method is used to mine data by classifying data on prospective students who are interested in studying at Labuhanbatu University.(Lian, Chen, Guan, & Song, 2021)

Confusion Matrix

The confusion matrix is an easy and effective tool to use to show the performance of a Classification and is very easy to use to determine the results.(Yun, 2021) Confusion matrix can be used to evaluate the work results of a model and can be used to determine the results of a data mining. The confusion matrix has several calculations, namely as follows.

Table 1. Confusion Matrix

Confusion Matrix		True Class (Actual)	
		P	N
Predicted class	Y	True Positive (TP)	False Positive (FP)
	N	False Negative (FN)	True Negative (TN)

To determine the calculation of the confusion matrix, we can do it by calculating accuracy, precision and recall.

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$$Accuracy \; = \; \frac{TP+TN}{TP+TN+FP+FN} \times \quad 100\%$$ (Yun, 2021)

$$Precision \; = \; \frac{TP}{TP+FP} \quad \times \quad 100\%$$
(Normawati & Prayogi, 2021)

$$Accuracy \; = \; \frac{TP}{TP+FN} \qquad \times \quad 100\%$$ (Agustina, Adrian, & Hermawati, 2021)

RESULT

Data Analysis

In the picture below is the data obtained from a questionnaire that was distributed to prospective students by visiting each school to conduct socialization about the Labuhanbatu University campus and the questionnaire we have created, which we will later share with prospective students. Prospective students who were sampled in this study were students of grade 12 SMA, SMK, and MA in Labuhanbatu Regency. In it there will be questions about lectures. The first question is where they go to school, which means they went to school before going to college, namely at the high school level, the next question is asking about the importance of going to college or not and the answer is yes and no, then the data will provide reasons why they didn't go to college, then the campus of their choice is in Labuhanbatu and why. Reason is a thing that will strengthen their choice, so having reasons convinces us more about their choice.

Table 2, Prospective Student Data

Full Name	Date Of Birth	Which School Are You From	Important Lecture	Reason	Campus Interest	Reason	Category
Agus Triatma	22/08/2003	Madrasah Aliya Nur Ibrahimy	Yes	Adding insight	There isn't any	There isn't any	Not Interest
Aini Rizka Nasution	04/12/2004	Madrasah Aliya Nur Ibrahimy	Yes	Adding insight	Universitas Labuhanbatu	Good accreditation	Interest
Aisa syuraya	20/02/2005	Madrasah Aliya Nur Ibrahimy	Yes	Adding insight	There isn't any	There isn't any	Not Interest
Anisa fadilla	23/07/2003	SMK Muhammadiyah	Yes	Adding insight	There isn't any	There isn't any	Not Interest
Annnisa Nurhidayahna hsb	30/06/2005	SMK Negeri 3 Rantau Utara	Yes	Adding insight	There isn't any	There isn't any	Not Interest
Bg pom alias Monang	03/02/2002	Madrasah Aliya Nur Ibrahimy	Yes	Spend money	Universitas Terbuka	Close Distance	Not Interest
Clara sefty	19/09/2004	Madrasah Aliya Nur Ibrahimy	Yes	Adding insight	There isn't any	There isn't any	Not Interest

*name of corresponding author

Dikyafrizanasution	11/07/2004	SMK Negeri 1 Rantau Utara	Yes	Adding insight	Universitas Labuhanbatu	Close Distance	Interest
Dinda Cahya Tanjung	29/07/2004	SMK Negeri 1 Rantau Utara	Yes	Adding experience	Universitas Al-Washliyah Labuhanbatu	Close Distance	Not Interest
Dinda Cecilia lubis	31/07/2004	Madrasah Aliya Nur Ibrahimy	Yes	Adding insight	Universitas Labuhanbatu	Good accreditation	Interest
Dini hayati	29/11/2004	SMK Negeri 1 Rantau Utara	Yes	Adding insight	Universitas Labuhanbatu	Close Distance	Interest
Dita Dwi Cahya	31/03/2005	SMK Negeri 1 Rantau Utara	Yes	Adding insight	Universitas Labuhanbatu	Good accreditation	Interest
Elisabet Zovanka Br Sihombing	01/12/2004	SMK Negeri 1 Rantau Utara	Yes	Adding insight	Universitas Labuhanbatu	Close Distance	Interest
Eliza	29/01/2006	SMK Negeri 3 Rantau Utara	Yes	Adding insight	Universitas Labuhanbatu	Close Distance	Interest
Ellya mustika	19/03/2005	SMK Muhammadiyah	Yes	Adding insight	There isn't any	There isn't any	Not Interest
Fadia Novika Batubara	04/04/2005	SMK Negeri 1 Rantau Utara	Yes	Adding insight	Universitas Labuhanbatu	Good accreditation	Interest
Fadzli Muhammad Fahlepi Tarigan	26/01/2005	SMK Muhammadiyah	Yes	Adding insight	There isn't any	There isn't any	Not Interest
Faiz Alkhamidi Pranata	25/02/2005	SMK Negeri 1 Rantau Utara	Yes	Adding insight	Universitas Labuhanbatu	Close Distance	Interest
Finda dewi	24/10/2004	SMK Negeri 3 Rantau Utara	Yes	Adding insight	Universitas Labuhanbatu	Close Distance	Interest
Fitri Anjeli Butar Butar	20/11/2004	SMK Negeri 1 Rantau Utara	Yes	Adding insight	Universitas	Close Distance	Interest

*name of corresponding author

					Labuhanbatu	
Fitri Handayani Siregar	15/11/2004	SMK Negeri 1 Rantau Utara	Yes	Adding insight	Universitas Labuhanbatu	Close Distance	Interest
Frisilia Marsaulina Sinaga	29/12/2004	SMK Negeri 1 Rantau Utara	Yes	Adding experience	Universitas Labuhanbatu	Good accreditation	Interest
Geradus Wancerman Zega	16/10/2003	SMK Negeri 1 Rantau Utara	Yes	Adding insight	Universitas Labuhanbatu	The cost is cheap	Interest
Gita Sipahutar	31/03/2005	SMK Negeri 1 Rantau Utara	Yes	Adding insight	Universitas Labuhanbatu	Close Distance	Interest
Hafiz Harifan Panjaitan	10/04/2005	Madrasah Aliya Nur Ibrahimy	Yes	Adding insight	Universitas Labuhanbatu	Good accreditation	Interest
Hulaizha Ramadhana Siregar	19/10/2004	SMK Negeri 1 Rantau Utara	Yes	Adding experience	Universitas Labuhanbatu	Good accreditation	Interest
Indah Nurmala Sari Hasibuan	23/03/2004	SMK Negeri 1 Rantau Utara	Yes	Adding insight	Universitas Labuhanbatu	Close Distance	Interest
Indah sahfitri	13/12/2004	SMK Negeri 3 Rantau Utara	Yes	Adding insight	Universitas Labuhanbatu	Close Distance	Interest
Indah Sari Ritonga	16/11/2004	SMK Negeri 3 Rantau Utara	Yes	Adding insight	Universitas Labuhanbatu	Good accreditation	Interest
Indi Amynarti	13/05/2005	SMK Negeri 1 Rantau Utara	Yes	Adding insight	Universitas Labuhanbatu	Close Distance	Interest
Intan aulia surbakti	02/03/2005	SMK Negeri 1 Rantau Utara	Yes	Adding experience	Universitas Labuhanbatu	Close Distance	Interest
Intan Nurjannah Pulungan	27/11/2005	SMK Negeri 1 Rantau Utara	Yes	Adding insight	Universitas Labuhanbatu	Good accreditation	Interest

*name of corresponding author

khairiah nasution	04/02/2005	Madrasah Aliya Nur Ibrahimy	Yes	Adding insight	Universitas Labuhanbatu	Good accreditation	Interest
Lek suhar	21/02/2002	Madrasah Aliya Nur Ibrahimy	Yes	Adding experience	Universitas Al-Washliyah Labuhanbatu	The cost is cheap	Not Interest
Lia Rahmadani	12/11/2004	SMK Negeri 3 Rantau Utara	Yes	Adding insight	Universitas Labuhanbatu	There isn't any	Interest
Lisa Agustin Nasution	10/08/2004	SMK Negeri 1 Rantau Utara	Yes	Adding insight	Universitas Labuhanbatu	Close Distance	Interest
Masya Adillah Hasibuan	22/03/2005	SMK Negeri 1 Rantau Utara	Yes	Adding insight	Universitas Labuhanbatu	Good accreditation	Interest
Meisaroh	05/09/2003	SMK Muhammadiyah	No	It's Okey	There isn't any	There isn't any	Not Interest
Melati Kristina Br Sitinjak	28/02/2005	SMK Negeri 3 Rantau Utara	Yes	Adding insight	Universitas Labuhanbatu	Close Distance	Interest
Melati Nainggolan	14/06/2004	SMK Negeri 1 Rantau Utara	Yes	Adding insight	Universitas Labuhanbatu	Close Distance	Interest
Mifta Sabrina	22/12/2004	SMK Negeri 1 Rantau Utara	Yes	Adding insight	Universitas Labuhanbatu	Close Distance	Interest
Mita dermawan tambunan	22/09/2004	SMK Negeri 3 Rantau Utara	Yes	Adding insight	Universitas Labuhanbatu	Close Distance	Interest
Modong harahap	01/01/2003	SMK Muhammadiyah	Yes	Adding insight	There isn't any	There isn't any	Not Interest
Muhammad Al Fareza	31/01/2005	Madrasah Aliya Nur Ibrahimy	Yes	Adding experience	There isn't any	There isn't any	Not Interest
Muhammad Wazdi Nasution	21/01/2005	SMK Muhammadiyah	Yes	Adding experience	There isn't any	There isn't any	Not Interest

*name of corresponding author

Mutiara Andalasiani	04/12/2004	SMK Negeri 3 Rantau Utara	Yes	Adding insight	Universitas Labuhanbatu	Close Distance	Interest
Mutiara Indy Kesuma	10/07/2005	SMK Negeri 3 Rantau Utara	Yes	Adding insight	Universitas Labuhanbatu	Good accreditation	Interest
Pera	20/03/2003	SMK Negeri 3 Rantau Utara	Yes	Adding insight	Universitas Labuhanbatu	Close Distance	Interest
Pitria Ningsih	07/07/2024	SMK Negeri 3 Rantau Utara	Yes	Adding insight	Universitas Labuhanbatu	Good accreditation	Interest
Rahma Nia Tasyianda	26/07/2004	Madrasah Aliya Nur Ibrahimy	Yes	Adding insight	Universitas Labuhanbatu	Close Distance	Interest
Raja Ray Dhandy	09/12/2004	Madrasah Aliya Nur Ibrahimy	Yes	Adding insight	Universitas Labuhanbatu	Good accreditation	Interest
Rama wulan suci	13/11/2004	SMK Negeri 3 Rantau Utara	Yes	Adding insight	Universitas Labuhanbatu	Good accreditation	Interest
Rati	05/06/2005	SMK Negeri 3 Rantau Utara	Yes	Adding insight	Universitas Islam Labuhanbatu	Close Distance	Not Interest
Ratna Dwi Mayani	21/03/2005	SMK Negeri 3 Rantau Utara	Yes	Adding insight	Universitas Labuhanbatu	Good accreditation	Interest
Reinilda Nasution	20/04/2005	SMK Muhammadiyah	Yes	Adding insight	There isn't any	There isn't any	Not Interest
Reva ramadhani	25/10/2004	SMK Muhammadiyah	Yes	Adding insight	There isn't any	There isn't any	Not Interest
Reza arlina	09/09/2005	SMK Muhammadiyah	Yes	Adding insight	Universitas Labuhanbatu	Close Distance	Interest
Shinta anggiani putri	24/11/2004	SMK Muhammadiyah	Yes	Adding insight	There isn't any	There isn't any	Not Interest
Sinti Yani	18/12/2004	Madrasah Aliya Nur Ibrahimy	Yes	Adding insight	Universitas	Good accreditation	Interest

*name of corresponding author

					Labuhanbatu		
Siti rezeki ramadhani	04/10/2004	SMK Negeri 3 Rantau Utara	Yes	Adding insight	Universitas Labuhanbatu	Close Distance	Interest
Sophia Caroline Br Manullang	25/04/2005	SMK Negeri 3 Rantau Utara	Yes	Adding insight	Universitas Labuhanbatu	Good accreditation	Interest
Suci Rahmadani	28/10/2004	SMK Negeri 3 Rantau Utara	Yes	Adding insight	Universitas Labuhanbatu	Close Distance	Interest
Syahputramalik Nasution	10/11/2003	SMK Negeri 3 Rantau Utara	Yes	Adding insight	Universitas Labuhanbatu	There isn't any	Interest
Viona rosalita	20/01/2005	SMK Negeri 3 Rantau Utara	Yes	Adding insight	Universitas Labuhanbatu	Close Distance	Interest
Wibu winanda	04/02/2000	Madrasah Aliya Nur Ibrahimy	Yes	Adding insight	Universitas Islam Labuhanbatu	Good accreditation	Not Interest

In table 2, the data table above is prospective student data obtained through a questionnaire. The data amounts to 65 prospective student data.

Table 3, Prospective Student Data Attributes

No	Attribute	Type	Description
1	Full Name	Teks	Full name of prospective student
2	Date Of Birth	Datetime	Date, month and year of birth of prospective students
3	Which School Are You From	Category	The origin of the student's school
4	Important Licture	Category	Ask about whether or not college is important
5	Reason (1)	Category	Their reasoning about the previous question
6	Campust Interest	Category	Campus of their choice in Labuhanbatu
7	Reason (2)	Category	The reason they chose the campus

In the attribute table. Research attributes are data that we have obtained from socialization results and questionnaire answers from prospective students. The attribute data that we have obtained, we have completed with the attributes, types and descriptions of each attribute.

Data Training

Training data is data that already has categories that have been targeted. The data will later be classified using the decision tree method with test data that does not yet have a target category. This was done to find out the category of each data in the test data.

*name of corresponding author

Table 4, Data Training

Full Name	Date Of Birth	Which School Are You From	Import ant Lecture	Reason	Campus Interest	Reason	Catego ry
Agus Triatma	22/08/20 03	Madrasah Aliya Nur Ibrahimy	Yes	Adding insight	There isn't any	There isn't any	Not Interest
Aini Rizka Nasution	04/12/20 04	Madrasah Aliya Nur Ibrahimy	Yes	Adding insight	Universit as Labuhanb atu	Good accreditat ion	Interest
Aisa syuraya	20/02/20 05	Madrasah Aliya Nur Ibrahimy	Yes	Adding insight	There isn't any	There isn't any	Not Interest
Anisa fadilla	23/07/20 03	SMK Muhammadi yah	Yes	Adding insight	There isn't any	There isn't any	Not Interest
Annnisa Nurhidayahna hsb	30/06/20 05	SMK Negeri 3 Rantau Utara	Yes	Adding insight	There isn't any	There isn't any	Not Interest
Bg pom alias Monang	03/02/20 02	Madrasah Aliya Nur Ibrahimy	Yes	Spend money	Universit as Terbuka	Close Distance	Not Interest
Clara sefty	19/09/20 04	Madrasah Aliya Nur Ibrahimy	Yes	Adding insight	There isn't any	There isn't any	Not Interest
Dikyafrizanas ution	11/07/20 04	SMK Negeri 1 Rantau Utara	Yes	Adding insight	Universit as Labuhanb atu	Close Distance	Interest
Dinda Cahya Tanjung	29/07/20 04	SMK Negeri 1 Rantau Utara	Yes	Adding experien ce	Universit as Al-Washliya h Labuhanb atu	Close Distance	Not Interest
Dinda Cecilia lubis	31/07/20 04	Madrasah Aliya Nur Ibrahimy	Yes	Adding insight	Universit as Labuhanb atu	Good accreditat ion	Interest
Dini hayati	29/11/20 04	SMK Negeri 1 Rantau Utara	Yes	Adding insight	Universit as Labuhanb atu	Close Distance	Interest
Dita Dwi Cahya	31/03/20 05	SMK Negeri 1 Rantau Utara	Yes	Adding insight	Universit as Labuhanb atu	Good accreditat ion	Interest
Elisabet Zovanka Br Sihombing	01/12/20 04	SMK Negeri 1 Rantau Utara	Yes	Adding insight	Universit as Labuhanb atu	Close Distance	Interest

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Eliza	29/01/2006	SMK Negeri 3 Rantau Utara	Yes	Adding insight	Universitas Labuhanbatu	Close Distance	Interest
Ellya mustika	19/03/2005	SMK Muhammadiyah	Yes	Adding insight	There isn't any	There isn't any	Not Interest
Fadia Novika Batubara	04/04/2005	SMK Negeri 1 Rantau Utara	Yes	Adding insight	Universitas Labuhanbatu	Good accreditation	Interest
Fadzli Muhammad Fahlepi Tarigan	26/01/2005	SMK Muhammadiyah	Yes	Adding insight	There isn't any	There isn't any	Not Interest
Faiz Alkhamidi Pranata	25/02/2005	SMK Negeri 1 Rantau Utara	Yes	Adding insight	Universitas Labuhanbatu	Close Distance	Interest
Finda dewi	24/10/2004	SMK Negeri 3 Rantau Utara	Yes	Adding insight	Universitas Labuhanbatu	Close Distance	Interest
Fitri Anjeli Butar Butar	20/11/2004	SMK Negeri 1 Rantau Utara	Yes	Adding insight	Universitas Labuhanbatu	Close Distance	Interest
Fitri Handayani Siregar	15/11/2004	SMK Negeri 1 Rantau Utara	Yes	Adding insight	Universitas Labuhanbatu	Close Distance	Interest
Frisilia Marsaulina Sinaga	29/12/2004	SMK Negeri 1 Rantau Utara	Yes	Adding experience	Universitas Labuhanbatu	Good accreditation	Interest
Geradus Wancerman Zega	16/10/2003	SMK Negeri 1 Rantau Utara	Yes	Adding insight	Universitas Labuhanbatu	The cost is cheap	Interest
Gita Sipahutar	31/03/2005	SMK Negeri 1 Rantau Utara	Yes	Adding insight	Universitas Labuhanbatu	Close Distance	Interest
Hafiz Harifan Panjaitan	10/04/2005	Madrasah Aliya Nur Ibrahimy	Yes	Adding insight	Universitas Labuhanbatu	Good accreditation	Interest
Hulaizha Ramadhana Siregar	19/10/2004	SMK Negeri 1 Rantau Utara	Yes	Adding experience	Universitas Labuhanbatu	Good accreditation	Interest

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Indah Nurmala Sari Hasibuan	23/03/2004	SMK Negeri 1 Rantau Utara	Yes	Adding insight	Universitas Labuhanbatu	Close Distance	Interest
Indah sahfitri	13/12/2004	SMK Negeri 3 Rantau Utara	Yes	Adding insight	Universitas Labuhanbatu	Close Distance	Interest
Indah Sari Ritonga	16/11/2004	SMK Negeri 3 Rantau Utara	Yes	Adding insight	Universitas Labuhanbatu	Good accreditation	Interest
Indi Amynarti	13/05/2005	SMK Negeri 1 Rantau Utara	Yes	Adding insight	Universitas Labuhanbatu	Close Distance	Interest
Intan aulia surbakti	02/03/2005	SMK Negeri 1 Rantau Utara	Yes	Adding experience	Universitas Labuhanbatu	Close Distance	Interest
Intan Nurjannah Pulungan	27/11/2005	SMK Negeri 1 Rantau Utara	Yes	Adding insight	Universitas Labuhanbatu	Good accreditation	Interest
khairiah nasution	04/02/2005	Madrasah Aliya Nur Ibrahimy	Yes	Adding insight	Universitas Labuhanbatu	Good accreditation	Interest
Lek suhar	21/02/2002	Madrasah Aliya Nur Ibrahimy	Yes	Adding experience	Universitas Al-Washliyah Labuhanbatu	The cost is cheap	Not Interest
Lia Rahmadani	12/11/2004	SMK Negeri 3 Rantau Utara	Yes	Adding insight	Universitas Labuhanbatu	There isn't any	Interest
Lisa Agustin Nasution	10/08/2004	SMK Negeri 1 Rantau Utara	Yes	Adding insight	Universitas Labuhanbatu	Close Distance	Interest
Masya Adillah Hasibuan	22/03/2005	SMK Negeri 1 Rantau Utara	Yes	Adding insight	Universitas Labuhanbatu	Good accreditation	Interest
Meisaroh	05/09/2003	SMK Muhammadiyah	No	It's Okey	There isn't any	There isn't any	Not Interest
Melati Kristina Br Sitinjak	28/02/2005	SMK Negeri 3 Rantau Utara	Yes	Adding insight	Universitas	Close Distance	Interest

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					Labuhanbatu		
Melati Nainggolan	14/06/2004	SMK Negeri 1 Rantau Utara	Yes	Adding insight	Universitas Labuhanbatu	Close Distance	Interest
Mifta Sabrina	22/12/2004	SMK Negeri 1 Rantau Utara	Yes	Adding insight	Universitas Labuhanbatu	Close Distance	Interest
Mita dermawan tambunan	22/09/2004	SMK Negeri 3 Rantau Utara	Yes	Adding insight	Universitas Labuhanbatu	Close Distance	Interest
Modong harahap	01/01/2003	SMK Muhammadiyah	Yes	Adding insight	There isn't any	There isn't any	Not Interest
Muhammad Al Fareza	31/01/2005	Madrasah Aliya Nur Ibrahimy	Yes	Adding experience	There isn't any	There isn't any	Not Interest
Muhammad Wazdi Nasution	21/01/2005	SMK Muhammadiyah	Yes	Adding experience	There isn't any	There isn't any	Not Interest
Mutiara Andalasiani	04/12/2004	SMK Negeri 3 Rantau Utara	Yes	Adding insight	Universitas Labuhanbatu	Close Distance	Interest
Mutiara Indy Kesuma	10/07/2005	SMK Negeri 3 Rantau Utara	Yes	Adding insight	Universitas Labuhanbatu	Good accreditation	Interest
Pera	20/03/2003	SMK Negeri 3 Rantau Utara	Yes	Adding insight	Universitas Labuhanbatu	Close Distance	Interest
Pitria Ningsih	07/07/2024	SMK Negeri 3 Rantau Utara	Yes	Adding insight	Universitas Labuhanbatu	Good accreditation	Interest
Rahma Nia Tasyianda	26/07/2004	Madrasah Aliya Nur Ibrahimy	Yes	Adding insight	Universitas Labuhanbatu	Close Distance	Interest
Raja Ray Dhandy	09/12/2004	Madrasah Aliya Nur Ibrahimy	Yes	Adding insight	Universitas Labuhanbatu	Good accreditation	Interest
Rama wulan suci	13/11/2004	SMK Negeri 3 Rantau Utara	Yes	Adding insight	Universitas Labuhanbatu	Good accreditation	Interest

*name of corresponding author

Rati	05/06/2005	SMK Negeri 3 Rantau Utara	Yes	Adding insight	Universitas Islam Labuhanbatu	Close Distance	Not Interest
Ratna Dwi Mayani	21/03/2005	SMK Negeri 3 Rantau Utara	Yes	Adding insight	Universitas Labuhanbatu	Good accreditation	Interest
Reinilda Nasution	20/04/2005	SMK Muhammadiyah	Yes	Adding insight	There isn't any	There isn't any	Not Interest
Reva ramadhani	25/10/2004	SMK Muhammadiyah	Yes	Adding insight	There isn't any	There isn't any	Not Interest
Reza arlina	09/09/2005	SMK Muhammadiyah	Yes	Adding insight	Universitas Labuhanbatu	Close Distance	Interest
Shinta anggiani putri	24/11/2004	SMK Muhammadiyah	Yes	Adding insight	There isn't any	There isn't any	Not Interest
Sinti Yani	18/12/2004	Madrasah Aliya Nur Ibrahimy	Yes	Adding insight	Universitas Labuhanbatu	Good accreditation	Interest
Siti rezeki ramadhani	04/10/2004	SMK Negeri 3 Rantau Utara	Yes	Adding insight	Universitas Labuhanbatu	Close Distance	Interest
Sophia Caroline Br Manullang	25/04/2005	SMK Negeri 3 Rantau Utara	Yes	Adding insight	Universitas Labuhanbatu	Good accreditation	Interest
Suci Rahmadani	28/10/2004	SMK Negeri 3 Rantau Utara	Yes	Adding insight	Universitas Labuhanbatu	Close Distance	Interest
Syahputramalik Nasution	10/11/2003	SMK Negeri 3 Rantau Utara	Yes	Adding insight	Universitas Labuhanbatu	There isn't any	Interest
Viona rosalita	20/01/2005	SMK Negeri 3 Rantau Utara	Yes	Adding insight	Universitas Labuhanbatu	Close Distance	Interest
Wibu winanda	04/02/2000	Madrasah Aliya Nur Ibrahimy	Yes	Adding insight	Universitas Islam Labuhanbatu	Good accreditation	Not Interest

Table 4 contains data on prospective students that we got from the socialization results and distribution of questionnaires to prospective students that we got from schools in Labuhanbatu.
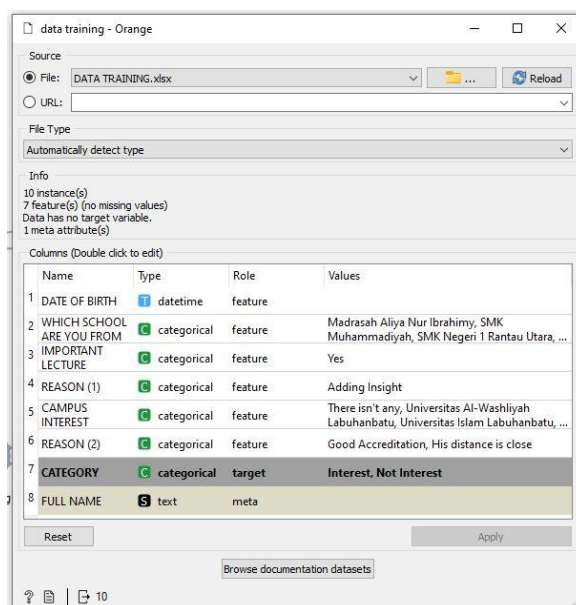
*name of corresponding author

Figure 1. *Selection of training data targets*

Figure 1 contains data on prospective students to study at Labuhanbatu University. By using the decision tree method we can classify the data by changing the role category to the target. Then you will find the results of Classification.

Data Selection Process (Preprocessing)

The column selection process is a process carried out to select columns to be used in classifying using the decision tree method. The data will be placed according to its placement.
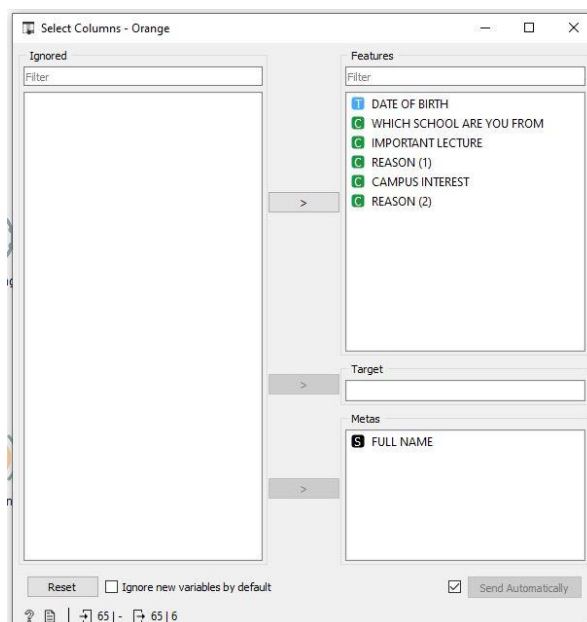

Figure 2. *Data Selection Process/ Preprocessing*

Figure 2 contains the data that you want to find the feasibility of acceptance. Full name, date of birth, important course, reason, choice of course, and finally the reason.

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Data Mining Process

The data mining process is carried out using a classification model which later we will use a decision tree algorithm. The classification percentage will be carried out using the orange application to determine the interest of prospective students to study at the Labuhanbatu University Campus.
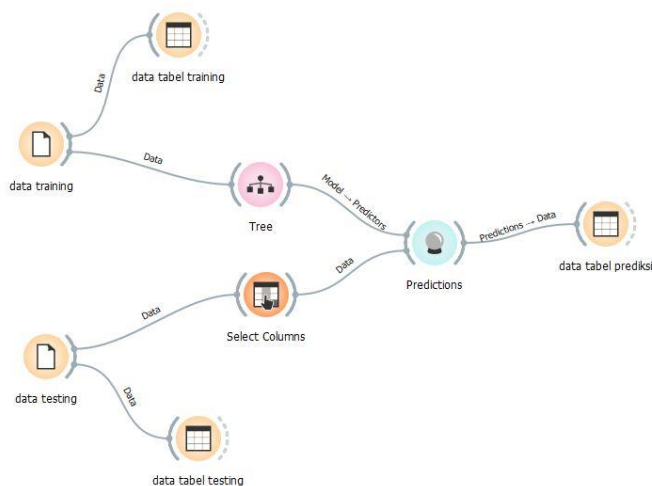

Figure 3. *Data Mining Process*

In Figure 3, the data mining process is designing a classification pattern using the orange application. This classification process is carried out using the decision tree method to determine the interest of prospective students.

Model Classification Testing Process

In the process of testing the decision tree method to see the results of testing prospective student data. This is done to group prospective students to study at the campus they want.
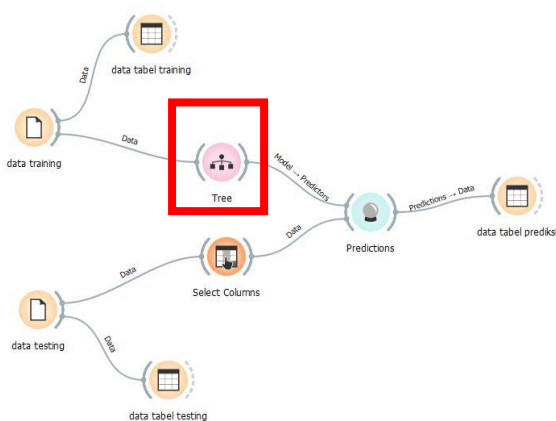

Figure 4. *Widget design model classification of scholarship acceptance status dataset*

In figure 4. The widget classification model in the image above is a widget that will determine the interest of prospective students to study at Labuhanbatu University. We can see in the image above in the widget section that is given a red box, which is the method we use to classify the interests of prospective students. The method we use is the decision tree method

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Classification Model Prediction Process

At this stage, a process is carried out to predict the interest of prospective students to study at Labuhanbatu University. We can see in the picture below which is the result of the prediction or classification that we have done using the decision tree method.

Table 5, Prediction Results of the Classification Model

Full Name	Date Of Birth	Which School Are You From	Important Lecture	Reason	Campus Interest	Reason	Category
Agus Triatma	22/08/2003	Madrasah Aliya Nur Ibrahimy	Yes	Adding insight	There isn't any	There isn't any	Not Interest
Aini Rizka Nasution	04/12/2004	Madrasah Aliya Nur Ibrahimy	Yes	Adding insight	Universitas Labuhanbatu	Good accreditation	Interest
Aisa syuraya	20/02/2005	Madrasah Aliya Nur Ibrahimy	Yes	Adding insight	There isn't any	There isn't any	Not Interest
Anisa fadilla	23/07/2003	SMK Muhammadiyah	Yes	Adding insight	There isn't any	There isn't any	Not Interest
Annnisa Nurhidayahna hsb	30/06/2005	SMK Negeri 3 Rantau Utara	Yes	Adding insight	There isn't any	There isn't any	Not Interest
Bg pom alias Monang	03/02/2002	Madrasah Aliya Nur Ibrahimy	Yes	Spend money	Universitas Terbuka	Close Distance	Not Interest
Clara sefty	19/09/2004	Madrasah Aliya Nur Ibrahimy	Yes	Adding insight	There isn't any	There isn't any	Not Interest
Dikyafrizanasution	11/07/2004	SMK Negeri 1 Rantau Utara	Yes	Adding insight	Universitas Labuhanbatu	Close Distance	Interest
Dinda Cahya Tanjung	29/07/2004	SMK Negeri 1 Rantau Utara	Yes	Adding experience	Universitas Al-Washliyah Labuhanbatu	Close Distance	Not Interest
Dinda Cecilia lubis	31/07/2004	Madrasah Aliya Nur Ibrahimy	Yes	Adding insight	Universitas Labuhanbatu	Good accreditation	Interest
Dini hayati	29/11/2004	SMK Negeri 1 Rantau Utara	Yes	Adding insight	Universitas Labuhanbatu	Close Distance	Interest

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Dita Dwi Cahya	31/03/2005	SMK Negeri 1 Rantau Utara	Yes	Adding insight	Universitas Labuhanbatu	Good accreditation	Interest
Elisabet Zovanka Br Sihombing	01/12/2004	SMK Negeri 1 Rantau Utara	Yes	Adding insight	Universitas Labuhanbatu	Close Distance	Interest
Eliza	29/01/2006	SMK Negeri 3 Rantau Utara	Yes	Adding insight	Universitas Labuhanbatu	Close Distance	Interest
Ellya mustika	19/03/2005	SMK Muhammadiyah	Yes	Adding insight	There isn't any	There isn't any	Not Interest
Fadia Novika Batubara	04/04/2005	SMK Negeri 1 Rantau Utara	Yes	Adding insight	Universitas Labuhanbatu	Good accreditation	Interest
Fadzli Muhammad Fahlepi Tarigan	26/01/2005	SMK Muhammadiyah	Yes	Adding insight	There isn't any	There isn't any	Not Interest
Faiz Alkhamidi Pranata	25/02/2005	SMK Negeri 1 Rantau Utara	Yes	Adding insight	Universitas Labuhanbatu	Close Distance	Interest
Finda dewi	24/10/2004	SMK Negeri 3 Rantau Utara	Yes	Adding insight	Universitas Labuhanbatu	Close Distance	Interest
Fitri Anjeli Butar Butar	20/11/2004	SMK Negeri 1 Rantau Utara	Yes	Adding insight	Universitas Labuhanbatu	Close Distance	Interest
Fitri Handayani Siregar	15/11/2004	SMK Negeri 1 Rantau Utara	Yes	Adding insight	Universitas Labuhanbatu	Close Distance	Interest
Frisilia Marsaulina Sinaga	29/12/2004	SMK Negeri 1 Rantau Utara	Yes	Adding experience	Universitas Labuhanbatu	Good accreditation	Interest
Geradus Wancerman Zega	16/10/2003	SMK Negeri 1 Rantau Utara	Yes	Adding insight	Universitas Labuhanbatu	The cost is cheap	Interest
Gita Sipahutar	31/03/2005	SMK Negeri 1 Rantau Utara	Yes	Adding insight	Universitas Labuhanbatu	Close Distance	Interest

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Hafiz Harifan Panjaitan	10/04/2005	Madrasah Aliya Nur Ibrahimy	Yes	Adding insight	Universitas Labuhanbatu	Good accreditation	Interest
Hulaizha Ramadhana Siregar	19/10/2004	SMK Negeri 1 Rantau Utara	Yes	Adding experience	Universitas Labuhanbatu	Good accreditation	Interest
Indah Nurmala Sari Hasibuan	23/03/2004	SMK Negeri 1 Rantau Utara	Yes	Adding insight	Universitas Labuhanbatu	Close Distance	Interest
Indah sahfitri	13/12/2004	SMK Negeri 3 Rantau Utara	Yes	Adding insight	Universitas Labuhanbatu	Close Distance	Interest
Indah Sari Ritonga	16/11/2004	SMK Negeri 3 Rantau Utara	Yes	Adding insight	Universitas Labuhanbatu	Good accreditation	Interest
Indi Amynarti	13/05/2005	SMK Negeri 1 Rantau Utara	Yes	Adding insight	Universitas Labuhanbatu	Close Distance	Interest
Intan aulia surbakti	02/03/2005	SMK Negeri 1 Rantau Utara	Yes	Adding experience	Universitas Labuhanbatu	Close Distance	Interest
Intan Nurjannah Pulungan	27/11/2005	SMK Negeri 1 Rantau Utara	Yes	Adding insight	Universitas Labuhanbatu	Good accreditation	Interest
khairiah nasution	04/02/2005	Madrasah Aliya Nur Ibrahimy	Yes	Adding insight	Universitas Labuhanbatu	Good accreditation	Interest
Lek suhar	21/02/2002	Madrasah Aliya Nur Ibrahimy	Yes	Adding experience	Universitas Al-Washliyah Labuhanbatu	The cost is cheap	Not Interest
Lia Rahmadani	12/11/2004	SMK Negeri 3 Rantau Utara	Yes	Adding insight	Universitas Labuhanbatu	There isn't any	Interest
Lisa Agustin Nasution	10/08/2004	SMK Negeri 1 Rantau Utara	Yes	Adding insight	Universitas Labuhanbatu	Close Distance	Interest

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Masya Adillah Hasibuan	22/03/2005	SMK Negeri 1 Rantau Utara	Yes	Adding insight	Universitas Labuhanbatu	Good accreditation	Interest
Meisaroh	05/09/2003	SMK Muhammadiyah	No	It's Okey	There isn't any	There isn't any	Not Interest
Melati Kristina Br Sitinjak	28/02/2005	SMK Negeri 3 Rantau Utara	Yes	Adding insight	Universitas Labuhanbatu	Close Distance	Interest
Melati Nainggolan	14/06/2004	SMK Negeri 1 Rantau Utara	Yes	Adding insight	Universitas Labuhanbatu	Close Distance	Interest
Mifta Sabrina	22/12/2004	SMK Negeri 1 Rantau Utara	Yes	Adding insight	Universitas Labuhanbatu	Close Distance	Interest
Mita dermawan tambunan	22/09/2004	SMK Negeri 3 Rantau Utara	Yes	Adding insight	Universitas Labuhanbatu	Close Distance	Interest
Modong harahap	01/01/2003	SMK Muhammadiyah	Yes	Adding insight	There isn't any	There isn't any	Not Interest
Muhammad Al Fareza	31/01/2005	Madrasah Aliya Nur Ibrahimy	Yes	Adding experience	There isn't any	There isn't any	Not Interest
Muhammad Wazdi Nasution	21/01/2005	SMK Muhammadiyah	Yes	Adding experience	There isn't any	There isn't any	Not Interest
Mutiara Andalasiani	04/12/2004	SMK Negeri 3 Rantau Utara	Yes	Adding insight	Universitas Labuhanbatu	Close Distance	Interest
Mutiara Indy Kesuma	10/07/2005	SMK Negeri 3 Rantau Utara	Yes	Adding insight	Universitas Labuhanbatu	Good accreditation	Interest
Pera	20/03/2003	SMK Negeri 3 Rantau Utara	Yes	Adding insight	Universitas Labuhanbatu	Close Distance	Interest
Pitria Ningsih	07/07/2024	SMK Negeri 3 Rantau Utara	Yes	Adding insight	Universitas Labuhanbatu	Good accreditation	Interest
Rahma Nia Tasyianda	26/07/2004	Madrasah Aliya Nur Ibrahimy	Yes	Adding insight	Universitas Labuhanbatu	Close Distance	Interest

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Raja Ray Dhandy	09/12/2004	Madrasah Aliya Nur Ibrahimy	Yes	Adding insight	Universitas Labuhanbatu	Good accreditation	Interest
Rama wulan suci	13/11/2004	SMK Negeri 3 Rantau Utara	Yes	Adding insight	Universitas Labuhanbatu	Good accreditation	Interest
Rati	05/06/2005	SMK Negeri 3 Rantau Utara	Yes	Adding insight	Universitas Islam Labuhanbatu	Close Distance	Not Interest
Ratna Dwi Mayani	21/03/2005	SMK Negeri 3 Rantau Utara	Yes	Adding insight	Universitas Labuhanbatu	Good accreditation	Interest
Reinilda Nasution	20/04/2005	SMK Muhammadiyah	Yes	Adding insight	There isn't any	There isn't any	Not Interest
Reva ramadhani	25/10/2004	SMK Muhammadiyah	Yes	Adding insight	There isn't any	There isn't any	Not Interest
Reza arlina	09/09/2005	SMK Muhammadiyah	Yes	Adding insight	Universitas Labuhanbatu	Close Distance	Interest
Shinta anggiani putri	24/11/2004	SMK Muhammadiyah	Yes	Adding insight	There isn't any	There isn't any	Not Interest
Sinti Yani	18/12/2004	Madrasah Aliya Nur Ibrahimy	Yes	Adding insight	Universitas Labuhanbatu	Good accreditation	Interest
Siti rezeki ramadhani	04/10/2004	SMK Negeri 3 Rantau Utara	Yes	Adding insight	Universitas Labuhanbatu	Close Distance	Interest
Sophia Caroline Br Manullang	25/04/2005	SMK Negeri 3 Rantau Utara	Yes	Adding insight	Universitas Labuhanbatu	Good accreditation	Interest
Suci Rahmadani	28/10/2004	SMK Negeri 3 Rantau Utara	Yes	Adding insight	Universitas Labuhanbatu	Close Distance	Interest
Syahputramalik Nasution	10/11/2003	SMK Negeri 3 Rantau Utara	Yes	Adding insight	Universitas Labuhanbatu	There isn't any	Interest

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| Viona rosalita | 20/01/2005 | SMK Negeri 3 Rantau Utara | Yes | Adding insight | Universitas Labuhanbatu | Close Distance | Interest |
| Wibu winanda | 04/02/2000 | Madrasah Aliya Nur Ibrahimy | Yes | Adding insight | Universitas Islam Labuhanbatu | Good accreditation | Not Interest |

Table 5 contains the results of predictions using the decision tree method which we apply using the Orange application. Then the results of the Classification of prospective students who are interested in studying at the Labuhanbatu University campus appear.

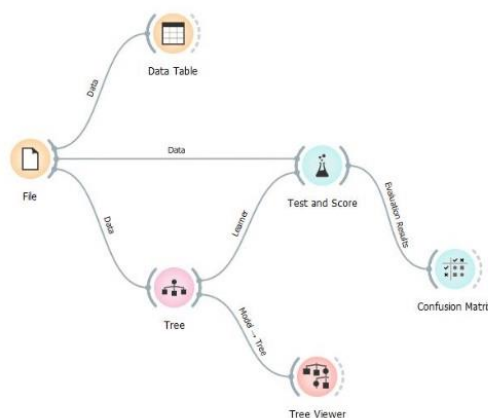### Classification Model Evaluation Results

Figure 5. Classification Evaluation Widget

Figure 5 contains a classification evaluation consisting of certain widgets to determine test scores and scores on the Classification of prospective students' interest in studying at Labuhanbatu University. The widget that we use is a confusion matrix to see accuracy, precision and recall from using the decision tree method to determine the interest of prospective students studying at Labuhanbatu University. Next, we will also use the tree review widget to see the results of the decision tree method in detail.

Tabel 6, Result of Test and Score

Model	AUC	CA	F1	Precision	Recall
kNN	0.974	0.985	0.984	0.985	0.985

In table 6 we find the test results and scores from the results of the calculation of 65 prospective student data that have entered the testing process, so we will get results for an AUC of 0.974, the AUC used from the data taken using a questionnaire and contains prospective student data different school. In this data there is a lot of random data, derived from positive and negative populations.

Evaluation Results with Confusion Matrix

Confusion Matrix is a tool used to predict data by classifying data using the decision tree method. There are many methods that we can use, but this time we are using the decision tree method to classify data on prospective students to study at Labuhanbatu University.

*name of corresponding author

Tabel 7, Result of Confusion Matrix

		Predicted		
		Interest	Not Interest	$\sum$
Actual	Interest	46	0	46
	Not Interest	1	18	19
	$\sum$	47	18	65

Table 7. The True Positive (TP) result is 46. True Negative (TN) is 18, False Positive (FP) is 0 and False Negative (FN) is 1. Then the values for accuracy, precision and recall are as follows:

$$Accuracy = \frac{46+18}{46+18+1+0} \times 100\% \qquad \text{Then the Accuracy value} \quad = \quad 98\%$$

$$Presisi = \frac{46}{46+0} \times 100\% \qquad \text{Then the Precision value} = \quad 100\%$$

$$Recall = \frac{46}{46+1} \times 100\% \qquad \text{Then the Recall value} \quad = \quad 97\%$$

Results from Tree Review

The tree review is obtained by connecting the decision tree wodget method with the tree review. Then a percentage will be produced from the Classification of prospective students' interest in studying at Labuhanbatu University. The classification uses the decision tree method.
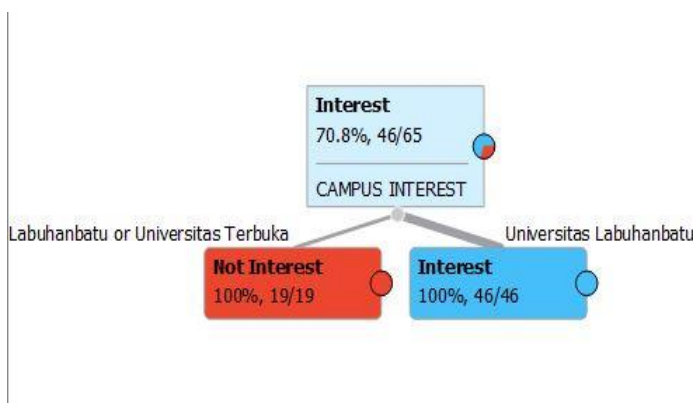

Figure 6. *ROC Analysis Targeting Social Assistance Eligible People*

Figure 6 states that the results of the tree review are 2 categories, the first is the interest category and the second is the uninterested category. Of the 65 prospective student data, there are 46 prospective students interested in studying at Labuhanbatu University and the rest are those who are not interested in studying or choosing other campuses in Labuhanbatu, the data are as many as 19 prospective students. 19 data from prospective students who choose does not mean they want to study outside Labuhanbatu, there are also prospective students who choose Labuhanbatu Al-Washliyah University, Labuhanbatu Islamic University and the Open University. We can see in the picture above the category.

DISCUSSIONS

This research was conducted to see the interest of prospective students to study at Labuhanbatu University. There are several campuses in Labuhanbatu, but we focus on the interests of prospective students on the Labuhanbatu University campus. There are many data mining methods that we can use. However, in our opinion, the Decision Tree method is very suitable when used to classify the interests of prospective students to study at Labuhanbatu University. Our research only classifies prospective students who are interested and not interested in studying at Labuhanbatu University. We cannot prevent

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them from studying at Labuhanbatu University or even outside of Labuhanbatu Regency. Because the research we did was not to invite prospective students to study at Labuhanbatu University. But our purpose in making this research is just to see their interest. If they don't choose Labuhanbatu University later, that's outside of our research.

CONCLUSION

Labuhanbatu is a district that has several campuses that have their own characteristics. So everyone who wants to study at the campus they want must have their own reasons. Therefore, we want to see the interest of prospective students to study at Labuhanbatu University. We will classify using the Decision Tree method to determine the interest of prospective students to study at Labuhanbatu University. We can see in Figure 11 that approximately 70% more prospective students are interested in studying at Labuhanbatu University. Classification using the decision tree method can be used and functions well according to our wants and needs. Data mining is one of the media that is often used by many people to carry out an analysis, be it classification, cluster, association and many other analyses. We can do data mining with various applications, namely orange and rapidminer. The research that we conducted and what we have described earlier is research to classify the interests of prospective students to study at Labuhanbatu University using the Decision Tree application.

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