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Analysis of Public Purchase Interest in Yamaha Motorcycles Using the K-Nearest Neighbor Method

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Abstract: This data mining will carry out a classification of people who are interested and not interested in buying Yamaha motorcycles. In the data mining process, a method is needed that can provide goals to the data mining process. That's because there are many data mining methods that can be used. In this study the method that will be used by the author is the K-Nearest Neighbor (kNN) method. This method will be used to classify people's buying interest in Yamaha motorbikes. This research was conducted because there are some people who say that Yamaha motorbikes are not good, use of wasteful fuel. Therefore this research was conducted to prove this statement. So a research was made about people's buying interest in Yamaha motorbikes. Classification results obtained from 100 community data. From the classification process that has been carried out, the results show that 41 community data (41% representation) are interested in buying Yamaha motorcycles and 59 community data (59% representation) are not interested in buying Yamaha motorbikes. The results obtained state that there are still many people who are interested in Yamaha motorbikes. But it can be used as a reference that people are interested in motorbikes that have a good appearance, use economical fuel and are affordable. These results were obtained from the community's answers in the questionnaire, they were interested in motorbikes that use little fuel, have good designs and are affordable.

Keywords: Classification, Confusion Matrix, Data Mining, K-Nearest Neighbor (kNN), Motorcycle.

INTRODUCTION

Motorcycles are 2-wheeled vehicles that are often used by people to carry goods, go to work, go to school. Motorcycles have become an important need of society. This is because the existence of a motorbike can facilitate community activities in terms of traveling. For example, if someone goes from home to school on foot it takes 30 minutes, but if they use a motorbike it only takes 10 minutes. This explains that motorbikes have become one of the important things for society. Due to the large number of people's needs for motorbikes, many motorbike brands have been made, especially in Indonesia, such as Honda, Yamaha, Suzuki, Kawasaki, KTM, BMW. These motorbikes already have products in Indonesia. But not all Indonesian people like all motorcycle brands. There are only a few motorbikes that are frequently and widely used in Indonesia. These motorbikes are Yamaha, Honda, Suzuki and Kawasaki. But there are some people who say that Yamaha motorbikes are not good. That's because the

*name of corresponding author

design of the Yamaha motorbike is just like that, the price is expensive and the engine heats up quickly. Many people prefer Honda motorbikes, that's because Honda has a good design, the price is affordable and in accordance with the shape and design of the motorbike. From the above, the author will conduct a research on people's buying interest in Yamaha motorbikes. It aims to determine how many people are interested in Yamaha motorbikes. That's because there are some who think that Yamaha motorbikes are not good. So with this research it can be seen that many or few people are interested in Yamaha motorbikes. This is an opinion or complaint expressed by some people. Therefore it is necessary to conduct a study to determine or prove these things and to determine people's buying interest in Yamaha motorbikes. To conduct this research, the author will do it in the data mining process. In the data mining process, data will be classified using a method capable of classifying data. The method to be used is the K-Nearest Neighbor (kNN) method.

Data mining is a data processing technique by extracting data and processing knowledge so that it can become a support in making a decision (Yassir et al., 2020) (Uçar & Karahoca, 2021). In this data mining process will be done Retrieval process decision, namely determining the Classification results of the sample data used in the data mining process (Patil & Tamane, 2018). In this data mining process, the data will be classified based on the predicted results done (Pour, Esmaeili, & Romoozi, 2022). The data mining approach can be seen from a structured analysis process that has a focus on data collection, model building and model testing (YAVUZ, 2022). In the data mining process, it will be assisted by using the K-Nearest Neighbor (kNN) method, which is a classification method that exists in data mining.

The K-Nearest Neighbor (kNN) method is a classification method that can be used in the data mining process. There are many methods that can be used for data classification, but the author uses the K-Nearest Neighbor (kNN) method. This method will carry out a data classification in the data mining process that will be processed in the orange application.

METHOD

The K-Nearest Neighbor (kNN) method is an algorithm that can make predictions with data classification techniques obtained based on the similarity of data in data mining (Kurniadi, Mulyani, & Muliana, 2021). The K-Nearest Neighbor (kNN) method is a method that uses an easy-to-use classification model understood and implemented. This method is also the simplest method available in machine learning. Therefore this method is very suitable for classifying people's buying interest in Yamaha motorbikes (Prasetio, 2020). The classification that will be carried out in data mining will later group the classification results into 2 categories, namely people who are interested and people who are not interested in buying Yamaha motorcycles. K-Nearest Neighbor (kNN) is also included in the 10 most popular algorithms in data mining that are often used by researchers (Sanjaya & Fitriyani, 2019). Therefore the K-Nearest Neighbor (kNN) method is an artificial intelligence algorithm that can carry out a classification based on test data based on predetermined rules (Nugraha & Herlina, 2021). The K-Nearest Neighbor (kNN) method will classify sample data about people's buying interest in Yamaha motorbikes. Many use the K-Nearest Neighbor (KNN) Method to determine the level of community satisfaction, be it the quality of a product, the convenience of a place, this is done using the K-Nearest Neighbor (KNN) Method to determine the level of community satisfaction. But in this study using the K-Nearest Neighbor (KNN) method, the author will determine the buying interest of the community to buy a Yamaha motorbike. The classification process will be carried out in data mining using the K-Nearest Neighbor (kNN) method. By using the K-Nearest Neighbor (kNN) method, so that the classification carried out can produce good accuracy results (Achyunda Putra, Utaminingrum, & Mahmudy, 2020).

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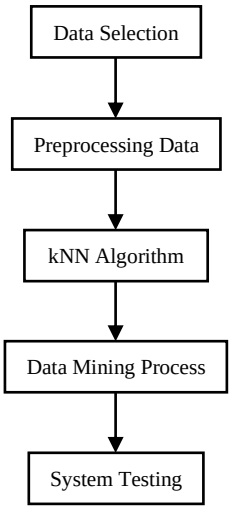

Fig 1. Process of Data Mining Stages

Figure 1 shows the stages in the data mining process. The first is data selection which is the process of selecting data and determining the feasibility of data to be used in research. The second stage is data preprocessing which is the stage of compiling data that has been selected initially. The data will be compiled and entered into an excel file, so that it can be used in the data mining process. The third stage is the K-Nearest Neighbor (kNN) Algorithm which is the method used in the data mining process. The fourth stage is the data mining process which is a widget design process using the K-Nearest Neighbor (kNN) method in data mining and which will be used for data classification. The fifth stage and the final stage is system testing which is a classification process using a widget design that has been made previously using the K-Nearest Neighbor (kNN) method in data mining.so that the classification results are obtained.

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). The confusion matrix can be used to evaluate the work of a model and can be used to determine the results of a data mining using the K-Nearest Neighbor method (Waliyansyah & Fitriyah, 2019). 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, researchers can do it by calculating accuracy, precision and recall.

$$\text{Accuracy} = \frac{TP+TN}{TP+TN+FP+FN} \times 100\% \quad (1)$$ (Kurniadi et al., 2021)

$$\text{Precision} = \frac{TP}{TP+FP} \times 100\% \quad (2)$$ (Supriyadi, Safitri, Amriza, & Kristiyanto, 2022)

$$\text{Recall} = \frac{TP}{TP+FN} \times 100\% \quad (3)$$ (Supriyadi et al., 2022)

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RESULT

Data Analysis

The table below is community data obtained by distributing questionnaires to the community. The data will be used as research sample data. research sample data is data that will be classified about people's buying interest in Yamaha motorbikes.

Table 2
Community Data (Sample Data)

Name	Motorcycle Brand	Riding Comfort	Fuel Usage	Motorcycle Design	Motorcycle Prices
Abdul Rahman	Honda	Comfortable	Economical	Good	Affordable
Ade Rizky	Kawasaki	Comfortable	Wasteful	Good	Expensive
Ademar Saputra	Yamaha	Comfortable	Economical	Good	Affordable
Agus Aditya	Kawasaki	Comfortable	Wasteful	Good	Expensive
Agustina Silalahi	Yamaha	Comfortable	Economical	Just normal	Affordable
Ahmad Boini Rambe	Yamaha	Comfortable	Economical	Good	Affordable
Ahmad Riva Dalimunthe	Honda	Comfortable	Economical	Good	Affordable
Ahmad Tontowi	Yamaha	Comfortable	Economical	Good	Affordable
Alwansyah Nasution	Kawasaki	Comfortable	Wasteful	Good	Affordable
Andera Prihatin	Honda	Comfortable	Economical	Just normal	Affordable
Anggi Wirda Putri	Honda	Comfortable	Economical	Good	Affordable
Arbaiyah Harahap	Honda	Comfortable	Wasteful	Good	Affordable
Asni Br Harahap	Honda	Comfortable	Economical	Good	Cheap
Ayu Sabila Tanjung	Honda	Comfortable	Wasteful	Good	Affordable
Bambang Syahputra	Honda	Comfortable	Wasteful	Good	Cheap
Berta Warni Simbolon	Honda	Comfortable	Economical	Good	Affordable
Boinah Tanjung	Yamaha	Comfortable	Economical	Good	Cheap
Chairul Amri Ritonga	Honda	Comfortable	Economical	Good	Affordable
Daffa RIzky Hasibuan	Kawasaki	Comfortable	Wasteful	Good	Expensive
Darwin	Yamaha	Comfortable	Wasteful	Good	Affordable
Dedi Alamsah Ritonga	Honda	Comfortable	Economical	Good	Expensive
Dhanu Phurnama	Yamaha	Comfortable	Economical	Good	Cheap
Dinda Amaliyah Rotonga	Honda	Comfortable	Economical	Good	Affordable

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Domi Aripiandy	Honda	Comfortable	Economical	Good	Affordable
Elidawati	Yamaha	Comfortable	Economical	Good	Expensive
Ernawati	Suzuki	Comfortable	Economical	Good	Cheap
Fadmasi Mendrofa	Yamaha	Comfortable	Economical	Good	Cheap
Faisal Harahap	Yamaha	Comfortable	Economical	Good	Affordable
Febriani Rahmi Sagala	Honda	Comfortable	Wasteful	Good	Cheap
Fitri Handayani	Honda	Comfortable	Economical	Good	Affordable
Fitriani Siregar	Yamaha	Comfortable	Economical	Good	Cheap
Hartati	Suzuki	Comfortable	Economical	Just normal	Affordable
Heri Sutiawan	Honda	Comfortable	Wasteful	Just normal	Cheap
Ira Ris Dayanti	Yamaha	Comfortable	Economical	Good	Affordable
Irma Suriyani Nasution	Yamaha	Comfortable	Wasteful	Good	Affordable
Ismail Miftah Harahap	Honda	Comfortable	Economical	Just normal	Affordable
Josefh Fernando Gulo	Honda	Comfortable	Economical	Just normal	Cheap
Junaidi	Yamaha	Comfortable	Economical	Just normal	Affordable
Juwita Mega Pohan	Yamaha	Comfortable	Wasteful	Good	Affordable
Lahja Hasibuan	Honda	Comfortable	Economical	Good	Cheap
Lely Yunita	Yamaha	Comfortable	Economical	Good	Affordable
Lyselda Rumondang	Yamaha	Comfortable	Economical	Good	Cheap
Maksum Abdullah	Honda	Comfortable	Economical	Good	Affordable
Mariyam	Yamaha	Comfortable	Economical	Just normal	Cheap
Marlina Rambe	Honda	Comfortable	Wasteful	Good	Expensive
Marni Hasibuan	Honda	Comfortable	Economical	Just normal	Affordable
Masria Harahap	Honda	Comfortable	Economical	Good	Affordable
May Saroh	Yamaha	Comfortable	Economical	Good	Affordable
Mislam Tanjung	Honda	Comfortable	Economical	Good	Affordable

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Muhammad Ali Ritonga	Honda	Comfortable	Economical	Good	Affordable
Muhammad Fadli	Yamaha	Comfortable	Economical	Good	Expensive
Nasim Pohan	Honda	Comfortable	Economical	Good	Affordable
Novita Casanova Gulo	Yamaha	Comfortable	Wasteful	Good	Affordable
Nuraisyah	Honda	Comfortable	Economical	Good	Affordable
Oryza Sativa	Yamaha	Comfortable	Economical	Good	Cheap
Pariyani Rambe	Yamaha	Comfortable	Economical	Just normal	Affordable
Rahmad RIdwan	Kawasaki	Comfortable	Economical	Good	Expensive
Raja Yusron Harahap	Honda	Comfortable	Wasteful	Good	Expensive
Ramli Dalimunthe	Honda	Comfortable	Economical	Just normal	Affordable
Ramli Gulo	Yamaha	Comfortable	Economical	Good	Affordable
Rasman	Yamaha	Comfortable	Economical	Good	Cheap
Ratna Sari	Yamaha	Comfortable	Economical	Good	Expensive
Reygina Halomoan	Honda	Comfortable	Economical	Good	Affordable
Rijian Sembiring	Honda	Comfortable	Wasteful	Good	Expensive
Rismala Sari	Honda	Comfortable	Economical	Just normal	Affordable
Rita Mandasari	Yamaha	Comfortable	Economical	Good	Affordable
Rizal Syahpytra	Honda	Comfortable	Economical	Good	Expensive
Rizky Abadi	Kawasaki	Comfortable	Economical	Good	Expensive
Rizky Al Fahmi Ritonga	Yamaha	Comfortable	Economical	Good	Cheap
Rohana	Yamaha	Comfortable	Wasteful	Good	Affordable
Salpinawati Pasaribu	Honda	Comfortable	Economical	Good	Expensive
Sam Hahiro Dalimunthe	Honda	Comfortable	Economical	Good	Affordable
Saminem	Yamaha	Comfortable	Economical	Good	Cheap
Samsiah Harahap	Honda	Comfortable	Economical	Good	Cheap
Sanusi	Yamaha	Comfortable	Economical	Good	Affordable
Sapitri	Yamaha	Comfortable	Wasteful	Good	Affordable

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Sarifuddin Tanjung	Honda	Comfortable	Economical	Good	Affordable
Siska Jesika	Honda	Comfortable	Economical	Good	Cheap
Siti Aisyah	Suzuki	Comfortable	Economical	Good	Cheap
Siti Maimunah	Honda	Comfortable	Economical	Good	Cheap
Sri Indriyani Putri	Yamaha	Comfortable	Economical	Good	Affordable
Sri Mariam Hasibuan	Yamaha	Comfortable	Wasteful	Good	Affordable
Sri Wahyuni	Honda	Comfortable	Economical	Good	Affordable
Sugeng Santoso	Honda	Comfortable	Economical	Good	Cheap
Supandi	Yamaha	Comfortable	Economical	Good	Cheap
Supriadi	Suzuki	Comfortable	Economical	Good	Cheap
Supriatik	Yamaha	Comfortable	Economical	Just normal	Affordable
Suryani Agustina	Honda	Comfortable	Economical	Good	Affordable
Susanna	Yamaha	Comfortable	Economical	Good	Cheap
Sutriani	Honda	Comfortable	Economical	Good	Cheap
Suyanto	Suzuki	Comfortable	Economical	Good	Affordable
Syafriandani Purba	Suzuki	Comfortable	Economical	Good	Affordable
Syaiful Bahri	Honda	Comfortable	Economical	Good	Cheap
Tuti Rahayu	Honda	Comfortable	Wasteful	Good	Expensive
Ulfa Khairani	Suzuki	Comfortable	Economical	Just normal	Cheap
Vera Sasmitha	Yamaha	Comfortable	Economical	Just normal	Expensive
Yeni Puspita Gulo	Yamaha	Comfortable	Economical	Good	Cheap
Yogi Heru Pratama	Yamaha	Comfortable	Economical	Good	Affordable
Zaskia Siregar	Honda	Comfortable	Economical	Good	Affordable
Zulfikar Rambe	Yamaha	Comfortable	Economical	Just normal	Expensive

Table 2 is sample data to be used in this study. The sample data used is 100 community data. The data will be classified in the data mining process using the K-Nearest Neighbor (kNN) method.

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Table 3
Community Data Attributes

No	Attribute	Text	Description
1	Name	Text	Community name
2	Motorcycle Brand	Categorical	Favorite motorcycle brand
3	Riding Comfort	Categorical	The comfort of driving using a motorbike that is in demand
4	Fuel Usage	Categorical	Lots of fuel used
5	Motorcycle Design	Categorical	The design and model of the motor of interest
6	Motorcycle Prices	Categorical	The price of the car you are interested in

Table 3 is an attribute of the sample data that will be used as data for research. attribute table on already equipped with a description or explanation of each attribute of the sample data so that it can be easily analyzed and understood by writers and readers.

Data Training

Training data is data that will be used in the data mining process. The training data will help the data mining process. The training data will be arranged in the form table so that it can be used properly. In this study the authors compiled the data in a table with file.xlsx format.

Table 4
Data Training

Name	Motorcycle Brand	Riding Comfort	Fuel Usage	Motorcycle Design	Motorcycle Prices	Category
Abdul Husein Harahap	Suzuki	Comfortable	Wasteful	Good	Expensive	Not Interested
Ahmad Fadli	Kawasaki	Comfortable	Wasteful	Good	Expensive	Not Interested
Ahmad Putra Siregar	Honda	Comfortable	Economical	Just normal	Affordable	Not Interested
Ali Syahban Harahap	Honda	Comfortable	Wasteful	Good	Cheap	Not Interested
Elidawati	Yamaha	Comfortable	Economical	Good	Expensive	Interest
Indah Permata Sari	Yamaha	Comfortable	Economical	Good	Cheap	Interest
Josua Abdi Musa	Kawasaki	Comfortable	Wasteful	Good	Affordable	Not Interested
Maulani Harahap	Suzuki	Comfortable	Economical	Just normal	Cheap	Not Interested
Muhammad Yusuf Harahap	Suzuki	Comfortable	Wasteful	Good	Affordable	Not Interested
Putri Khairani	Yamaha	Comfortable	Wasteful	Good	Affordable	Interest
Rifki Muhaimin	Yamaha	Comfortable	Wasteful	Just normal	Expensive	Interest
Rita Ariani Harahap	Yamaha	Comfortable	Economical	Just normal	Affordable	Interest
Siti Fatma Khairani	Suzuki	Comfortable	Economical	Just normal	Expensive	Not Interested
Siti Nursani Lubis	Honda	Comfortable	Economical	Just normal	Affordable	Not Interested
Sri Rahayu Harahap	Kawasaki	Comfortable	Wasteful	Good	Expensive	Not Interested
Wahyu Aji Harahap	Suzuki	Comfortable	Wasteful	Good	Affordable	Not Interested

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Table 4 is the training data that will be used to assist the classification process using the K-Nearest Neighbor (kNN) method.

Table 5
Community Column Data

No	Attribute	Type	Role	Values
1	Name	Text	Meta	
2	Motorcycle Brand	Categorical	Feature	Honda, Kawasaki, Suzuki, Yamaha
3	Riding Comfort	Categorical	Feature	Comfortable
4	Fuel Usage	Categorical	Feature	Economical, Wasterful
5	Motorcycle Design	Categorical	Feature	Good, Just Normal
6	Motorcycle Prices	Categorical	Feature	Affordable, Cheap, Expensive
7	Category	Categorical	Target	Interest, Not Interested

Table 5 is a sample data attribute that has been compiled and is equipped with data types, data roles and data values. This research will be done by using the K-Nearest Neighbor (kNN) method in data mining. By using the K-Nearest Neighbor (kNN) method, the role on the attribute category of features changed become a target so that Classification can be carried out and get results.

Data Selection Process (Preprocessing)

The data selection process is the process of selecting data to be used as sample data to be used in data mining (Watratan, B, Moeis, Informasi, & Makassar, 2020). So at this stage it is the process of determining the data and will be compiled based on predetermined conditions. This data needs to be compiled so that it can be used optimally in data usage (Dhina Nur Fitriana & Yuliant Sibaroni, 2020). In the preprocessing process, the sample data that has been obtained will be arranged and arranged according to the provisions so that it can be used in the data mining process. (Al-Rasheed, 2021).

Data Mining Process

The data mining process is a process that is carried out using the Classification model with the K-Nearest Neighbor (kNN) method and will be applied using the orange application.

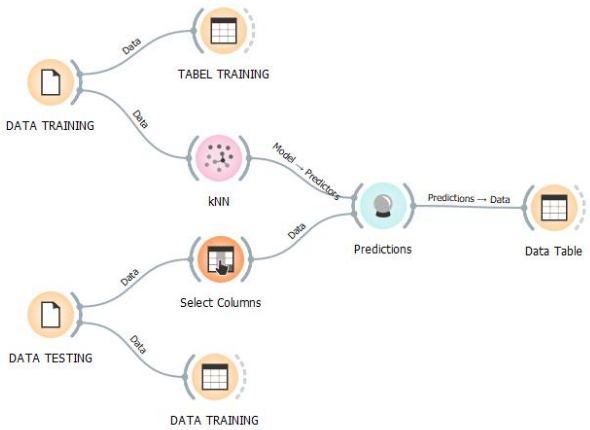

Fig 2. *Data Mining Process*

Figure 2 is the data mining process carried out in the orange application. This process is the process of developing and designing the K-Nearest Neighbor (kNN) method widget so that it can be used for Classification. The widget design in this process is carried out so that the K-Nearest Neighbor (kNN) method can be used and in order to get the appropriate results. The process of the K-Nearest Neighbor (kNN) method will carry out a classification by entering data in the data mining process. Data that has been entered into data mining, the data will be classified and grouped into certain categories or classes.

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Classification Model Testing Process

This testing process will be carried out using the K-Nearest Neighbor (kNN) method. The data to be used in this process are training data and testing data. The test data is sample data in this study.

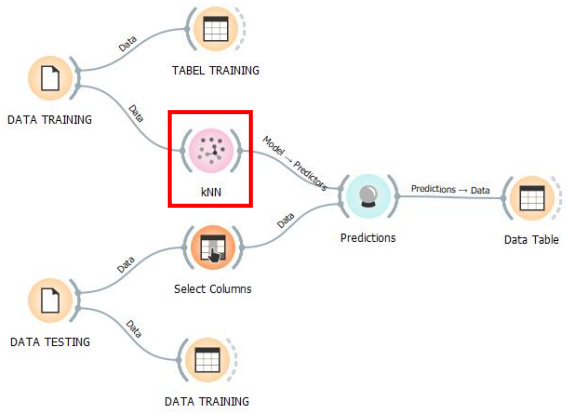

Fig 3. *Widget Design Dataset Classification Model Public Purchase Interest in Yamaha Motorcycles*

Figure 3 is the prediction process of the Classification model which is carried out using the K-Nearest Neighbor (kNN) method. The widget in the red box is the K-Nearest Neighbor (kNN) method used in this study. In the process of the K-Nearest Neighbor (kNN) method, data will be classified so that data can be categorized according to predetermined classes or categories. In this study, data will be categorized into 2 categories, namely people's interest and not interest in buying Yamaha motorbikes.

Classification Model Predictions Process

This process is the prediction result of the Classification model that has been carried out using the K-Nearest Neighbor (kNN) method. At this stage, the classification results are carried out using the K-Nearest Neighbor (kNN) method.

Table 6
Classification Model Prediction Results

Name	Motorcycle Brand	Riding Comfort	Fuel Usage	Motorcycle Design	Motorcycle Prices	Category
Abdul Rahman	Honda	Comfortable	Economical	Good	Affordable	Not Interested
Ade Rizky	Kawasaki	Comfortable	Wasteful	Good	Expensive	Not Interested
Ademar Saputra	Yamaha	Comfortable	Economical	Good	Affordable	Interest
Agus Aditya	Kawasaki	Comfortable	Wasteful	Good	Expensive	Not Interested
Agustina Silalahi	Yamaha	Comfortable	Economical	Just normal	Affordable	Interest
Ahmad Boini Rambe	Yamaha	Comfortable	Economical	Good	Affordable	Interest
Ahmad Riva Dalimunthe	Honda	Comfortable	Economical	Good	Affordable	Not Interested
Ahmad Tontowi	Yamaha	Comfortable	Economical	Good	Affordable	Interest
Alwansyah Nasution	Kawasaki	Comfortable	Wasteful	Good	Affordable	Not Interested

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Andera Prihatin	Honda	Comfortable	Economical	Just normal	Affordable	Not Interested
Anggi Wirda Putri	Honda	Comfortable	Economical	Good	Affordable	Not Interested
Arbaiyah Harahap	Honda	Comfortable	Wasteful	Good	Affordable	Not Interested
Asni Br Harahap	Honda	Comfortable	Economical	Good	Cheap	Not Interested
Ayu Sabila Tanjung	Honda	Comfortable	Wasteful	Good	Affordable	Not Interested
Bambang Syahputra	Honda	Comfortable	Wasteful	Good	Cheap	Not Interested
Berta Warni Simbolon	Honda	Comfortable	Economical	Good	Affordable	Not Interested
Boinah Tanjung	Yamaha	Comfortable	Economical	Good	Cheap	Interest
Chairul Amri Ritonga	Honda	Comfortable	Economical	Good	Affordable	Not Interested
Daffa RIzky Hasibuan	Kawasaki	Comfortable	Wasteful	Good	Expensive	Not Interested
Darwin	Yamaha	Comfortable	Wasteful	Good	Affordable	Interest
Dedi Alamsah Ritonga	Honda	Comfortable	Economical	Good	Expensive	Not Interested
Dhanu Phurnama	Yamaha	Comfortable	Economical	Good	Cheap	Interest
Dinda Amaliyah Rotonga	Honda	Comfortable	Economical	Good	Affordable	Not Interested
Domi Aripiandy	Honda	Comfortable	Economical	Good	Affordable	Not Interested
Elidawati	Yamaha	Comfortable	Economical	Good	Expensive	Interest
Ernawati	Suzuki	Comfortable	Economical	Good	Cheap	Not Interested
Fadmasi Mendrofa	Yamaha	Comfortable	Economical	Good	Cheap	Interest
Faisal Harahap	Yamaha	Comfortable	Economical	Good	Affordable	Interest
Febriani Rahmi Sagala	Honda	Comfortable	Wasteful	Good	Cheap	Not Interested
Fitri Handayani	Honda	Comfortable	Economical	Good	Affordable	Not Interested
Fitriani Siregar	Yamaha	Comfortable	Economical	Good	Cheap	Interest
Hartati	Suzuki	Comfortable	Economical	Just normal	Affordable	Not Interested
Heri Sutiawan	Honda	Comfortable	Wasteful	Just normal	Cheap	Not Interested
Ira Ris Dayanti	Yamaha	Comfortable	Economical	Good	Affordable	Interest
Irma Suriyani Nasution	Yamaha	Comfortable	Wasteful	Good	Affordable	Interest
Ismail Miftah Harahap	Honda	Comfortable	Economical	Just normal	Affordable	Not Interested
Josefh Fernando Gulo	Honda	Comfortable	Economical	Just normal	Cheap	Not Interested
Junaidi	Yamaha	Comfortable	Economical	Just normal	Affordable	Interest
Juwita Mega Pohan	Yamaha	Comfortable	Wasteful	Good	Affordable	Interest

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Lahja Hasibuan	Honda	Comfortable	Economical	Good	Cheap	Not Interested
Lely Yunita	Yamaha	Comfortable	Economical	Good	Affordable	Interest
Lyselda Rumondang	Yamaha	Comfortable	Economical	Good	Cheap	Interest
Maksum Abdullah	Honda	Comfortable	Economical	Good	Affordable	Not Interested
Mariyam	Yamaha	Comfortable	Economical	Just normal	Cheap	Interest
Marlina Rambe	Honda	Comfortable	Wasteful	Good	Expensive	Not Interested
Marni Hasibuan	Honda	Comfortable	Economical	Just normal	Affordable	Not Interested
Masria Harahap	Honda	Comfortable	Economical	Good	Affordable	Not Interested
May Saroh	Yamaha	Comfortable	Economical	Good	Affordable	Interest
Mislam Tanjung	Honda	Comfortable	Economical	Good	Affordable	Not Interested
Muhammad Ali Ritonga	Honda	Comfortable	Economical	Good	Affordable	Not Interested
Muhammad Fadli	Yamaha	Comfortable	Economical	Good	Expensive	Interest
Nasim Pohan	Honda	Comfortable	Economical	Good	Affordable	Not Interested
Novita Casanova Gulo	Yamaha	Comfortable	Wasteful	Good	Affordable	Interest
Nuraisyah	Honda	Comfortable	Economical	Good	Affordable	Not Interested
Oryza Sativa	Yamaha	Comfortable	Economical	Good	Cheap	Interest
Pariyani Rambe	Yamaha	Comfortable	Economical	Just normal	Affordable	Interest
Rahmad RIdwan	Kawasaki	Comfortable	Economical	Good	Expensive	Not Interested
Raja Yusron Harahap	Honda	Comfortable	Wasteful	Good	Expensive	Not Interested
Ramli Dalimunthe	Honda	Comfortable	Economical	Just normal	Affordable	Not Interested
Ramli Gulo	Yamaha	Comfortable	Economical	Good	Affordable	Interest
Rasman	Yamaha	Comfortable	Economical	Good	Cheap	Interest
Ratna Sari	Yamaha	Comfortable	Economical	Good	Expensive	Interest
Reygina Halomoan	Honda	Comfortable	Economical	Good	Affordable	Not Interested
Rijian Sembiring	Honda	Comfortable	Wasteful	Good	Expensive	Not Interested
Rismala Sari	Honda	Comfortable	Economical	Just normal	Affordable	Not Interested
Rita Mandasari	Yamaha	Comfortable	Economical	Good	Affordable	Interest
Rizal Syahpytra	Honda	Comfortable	Economical	Good	Expensive	Not Interested
Rizky Abadi	Kawasaki	Comfortable	Economical	Good	Expensive	Not Interested
Rizky Al Fahmi Ritonga	Yamaha	Comfortable	Economical	Good	Cheap	Interest
Rohana	Yamaha	Comfortable	Wasteful	Good	Affordable	Interest

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Salpinawati Pasaribu	Honda	Comfortable	Economical	Good	Expensive	Not Interested
Sam Hahiro Dalimunthe	Honda	Comfortable	Economical	Good	Affordable	Not Interested
Saminem	Yamaha	Comfortable	Economical	Good	Cheap	Interest
Samsiah Harahap	Honda	Comfortable	Economical	Good	Cheap	Not Interested
Sanusi	Yamaha	Comfortable	Economical	Good	Affordable	Interest
Sapitri	Yamaha	Comfortable	Wasteful	Good	Affordable	Interest
Sarifuddin Tanjung	Honda	Comfortable	Economical	Good	Affordable	Not Interested
Siska Jesika	Honda	Comfortable	Economical	Good	Cheap	Not Interested
Siti Aisyah	Suzuki	Comfortable	Economical	Good	Cheap	Not Interested
Siti Maimunah	Honda	Comfortable	Economical	Good	Cheap	Not Interested
Sri Indriyani Putri	Yamaha	Comfortable	Economical	Good	Affordable	Interest
Sri Mariam Hasibuan	Yamaha	Comfortable	Wasteful	Good	Affordable	Interest
Sri Wahyuni	Honda	Comfortable	Economical	Good	Affordable	Not Interested
Sugeng Santoso	Honda	Comfortable	Economical	Good	Cheap	Not Interested
Supandi	Yamaha	Comfortable	Economical	Good	Cheap	Interest
Supriadi	Suzuki	Comfortable	Economical	Good	Cheap	Not Interested
Supriatik	Yamaha	Comfortable	Economical	Just normal	Affordable	Interest
Suryani Agustina	Honda	Comfortable	Economical	Good	Affordable	Not Interested
Susanna	Yamaha	Comfortable	Economical	Good	Cheap	Interest
Sutriani	Honda	Comfortable	Economical	Good	Cheap	Not Interested
Suyanto	Suzuki	Comfortable	Economical	Good	Affordable	Not Interested
Syafriandani Purba	Suzuki	Comfortable	Economical	Good	Affordable	Not Interested
Syaiful Bahri	Honda	Comfortable	Economical	Good	Cheap	Not Interested
Tuti Rahayu	Honda	Comfortable	Wasteful	Good	Expensive	Not Interested
Ulfa Khairani	Suzuki	Comfortable	Economical	Just normal	Cheap	Not Interested
Vera Sasmitha	Yamaha	Comfortable	Economical	Just normal	Expensive	Interest
Yeni Puspita Gulo	Yamaha	Comfortable	Economical	Good	Cheap	Interest
Yogi Heru Pratama	Yamaha	Comfortable	Economical	Good	Affordable	Interest
Zaskia Siregar	Honda	Comfortable	Economical	Good	Affordable	Not Interested
Zulfikar Rambe	Yamaha	Comfortable	Economical	Just normal	Expensive	Interest

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Table 6 is the prediction result obtained from data classification using the K-Nearest Neighbor (kNN) method which is processed in data mining using the orange application. The data above already contains the results of the Classification of people's interest and disinterest in buying Yamaha motorcycles. In this data mining process, the authors used sample data of 100 community data. From the classification process that has been carried out, the results show that 41 community data (41% representation) are interested in buying Yamaha motorcycles and 59 community data (59% representation) are not interested in buying Yamaha motorbikes.

Classification Model Evaluation Results

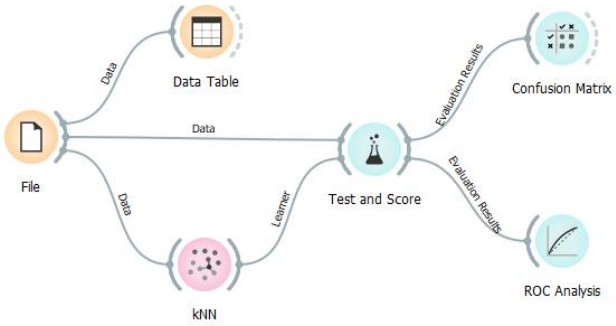

Fig 4. *Design Widget Evaluation Process*

Figure 4 is evacuation Classification to determine test results and scores. After that the author will also determine the results for the confusion matrix and ROC analysis. To get these results, 1 dataset is needed which is obtained from 2 data, training data and testing data. So the training data and testing data are classified and get the Classification results, that is the data set that will be used to get the test and score results and also to get the results of the confusion matrix and roc analysis.

Table 7
Result of Test and Score

Model	AUC	CA	F1	Precision	Recall
kNN	1.000	1.000	1.000	1.000	1.000

In table 7 is the test and score of the evaluation results with the Classification model using the K-Nearest Neighbor (kNN) method. Then the results for the test and score are obtained. For an AUC result of 1,000, a CA result of 1,000, an F1 result of 1,000, a Precision result of 1,000 and a Recall result of 1,000.

Evaluation Result with Confusion Matrix

The confusion matrix is a widget that is used as a measuring tool for classification techniques using certain methods that can classify data. This confusion matrix is obtained using the K-Nearest Neighbor (kNN) method.

Table 8
Results of the Confusion Matrix

		Predicted		
		Interest	Not Interested	∑
Actual	Interest	41	0	41
	Not Interested	0	59	59
	∑	41	59	100

Table 8 is the result of the confusion matrix obtained from the evaluation of the Classification model. The results of the confusion matrix are True Positive (TP) is 41. True Negative (TN) is 59, False Positive (FP) is 0 and False Negative (FN) is 0. Then the values for accuracy, precision and recall are as follows:

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$$\boldsymbol{Accuracy} = \frac{41+59}{41+59+0+0} \times 100\% \quad \text{Then the Accuracy value} = 100\%$$

$$\boldsymbol{Presisi} = \frac{41}{41+0} \times 100\% \quad \text{Then the Precision value} = 100\%$$

$$\boldsymbol{Recall} = \frac{41}{41+0} \times 100\% \quad \text{Then the Recall value} = 100\%$$

Evaluation Result with ROC Curve

ROC Analysis is obtained from the evaluation results of the Classification model with the addition of the ROC Analysis widget to get a graphic image of positive results and negative results. These results can be seen in Figures 5 and 6.

Fig 5. *ROC Analysis of people who are interested in buying Yamaha motorbikes*

In figure 5 is the result of ROC Analysis people's buying interest in Yamaha motorbikes. The results obtained were 0.333 people who were interested in buying a Yamaha motorbike.

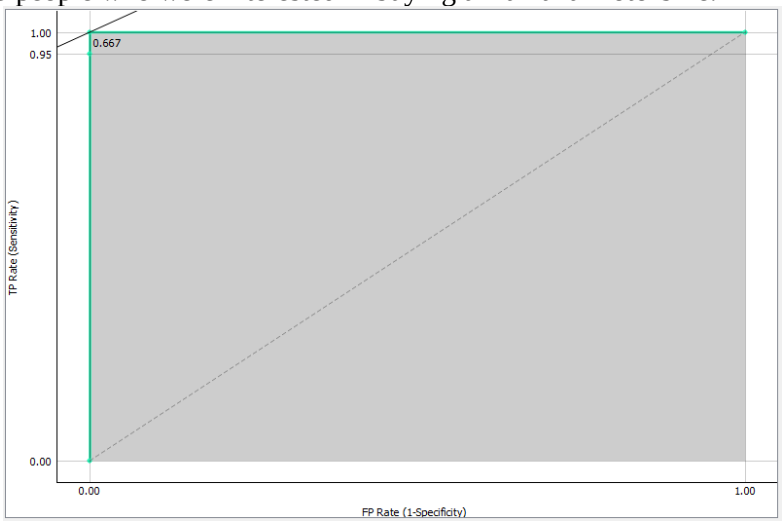

Fig 6. *ROC Analysis of people who are not interested in buying Yamaha motorbikes*

Figure 6 is the result of ROC Analysis people's buying interest in Yamaha motorbikes. The results obtained were 0.667 people who were not interested in buying Yamaha motorbikes.

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DISCUSSIONS

In this study, the authors wanted to determine the public's buying interest in Yamaha motorbikes. This was done to see people's interest in motorbikes. From the magnitude of technological developments that have occurred to date, this has led to the development of types and brands of motorcycles. But there are many motorcycle developments, not all people like all types of motorbikes. Everyone has their own interests and likes. Therefore, a study was conducted to determine public interest in motorbikes, so that it could be seen how many motorcycles were in demand by the public. This is because people's needs for motorbikes are different. There are people who need motorbikes that can carry a lot of goods, there are people who need fast motorbikes and there are people who need motorbikes that are fuel efficient. This is what causes people's interest in motorcycles to be different. The results obtained from the questionnaire show that between Yamaha and Honda motorcycles, there are almost the same number of people who are interested in these two types of motorbikes. But in this study, the authors only discussed and examined public interest in Yamaha motorbikes.

Research conducted by researchers uses the K-Nearest Neighbor (kNN) method and is processed in data mining. Sample data will be classified in data mining using the K-Nearest Neighbor (kNN) method. The classification results obtained from 100 community data which became sample data were that 41 community data (for a representation result of 41%) were interested in buying a Yamaha motorcycle and 59 community data (for a representation result of 59%) were not interested in buying a Yamaha motorbike. The results stated that the public's buying interest in Yamaha motorbikes was not that big, only some people were interested in buying Yamaha motorbikes. After the classification results are obtained, the accuracy results will also be obtained from the evaluation process of the classification results to prove the correctness of the K-Nearest Neighbor (kNN) method. The accuracy results obtained from the test and score widget are 100% and the accuracy results obtained from the confusion matrix widget are 100%. The comparison of the accuracy results obtained from the two widgets is 1: 1. The accuracy results state that the K-Nearest Neighbor (kNN) method is very suitable for use as a classification method and the K-Nearest Neighbor (kNN) method is also a very good method to determine the classification results. From the results of this study, it can be used as a reference or guide for people who want to buy motorbikes and can also be used by people who want to sell motorbikes. That's because they can see the many interests and reasons someone has for buying a motorbike.

CONCLUSION

Motorcycles are one of the most important things for society. But not all motorbikes become important things for society. Each community can choose the type or brand that they are interested in. This is so that there is a sense of satisfaction that they will feel when they have the motorbike they are interested in. There are many types and brands of motorbikes in Indonesia, especially Yamaha and Honda motorbikes. There are some people who say that Yamaha motorbikes are not good, the engine heats up easily and the price is also expensive. To prove this statement, the author conducted a study on people's buying interest in Yamaha motorbikes. The research was conducted using the K-Nearest Neighbor (kNN) method. The data that has been obtained will be classified into mining using the K-Nearest Neighbor (kNN) method. The classification results obtained from 100 community data which became sample data were that 41 community data (for a representation result of 41%) were interested in buying a Yamaha motorcycle and 59 community data (for a representation result of 59%) were not interested in buying a Yamaha motorbike. For the results obtained from the questionnaire, many are also interested in Honda motorbikes, this is because Honda's appearance design is good. The result obtained from the questionnaire shows that the number of people who are interested in Honda and Yamaha motorbikes is almost the same. It became one of the competitions in the production of motors.

With this research, it can be a reference for selling a motorcycle product. From the parameters in table can be a reference for making a motorbike that is really in demand by the public. The community's need for motorbikes is not just for style, but they will buy a motorbike that can be used according to their needs. Therefore, many people will buy motorbikes that are more fuel efficient, the price is affordable and of course they can be used in the long term. From the results of this study also obtained the same thing, meaning that people prioritize functions so that motorbikes can be useful.

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