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APPLICATION OF THE K-MEANS AND DECISION TREE ALGORITHMS IN DETERMINING OUTSTANDING STUDENTS (CASE STUDY: SDS KARTIKA X-6)

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Abstract

This research aims to find out how to determine outstanding students with class achievement and school achievement at SDS Kartika X-6. Data collection for this research took place at SDS Kartika X-6 which is a private elementary school belonging to the Army. To find out the factors that influence determining outstanding students, you can take steps to improve student achievement at SDS Kartika X-6. By using the methods in this research, namely the K-Means and Decision Tree algorithms, these methods will be selected in determining outstanding students. Using clusters using K-Means then classifying using Decision Tree, using a dataset of 28 data in this research. Using the SDS Kartika X-6 student dataset which contains number, gender, MTK, BI, science, religion, class achievement and school achievement. In the Decision Tree method, a label is needed so that the target data can be processed. Next, the Decision Tree Algorithm carried out classification modeling, it was found that academic grades, class achievements and school achievements had an influence in determining outstanding students at SDS Kartika X-6. The K-Means algorithm is produced in 3 clusters or categories, namely Very Good, Good and Fairly Good. In the testing stage using the Decision Tree method, the prediction accuracy was 100%, and the area under the curve (AUC) was 0.750. At this testing stage, it is suitable for determining outstanding students.

Keywords: *Clustering, Decision Tree, Google Colab, K-Means, Academic Value*

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1. INTRODUCTION

To be able to keep up with the times, one must first strengthen oneself, and education is a wonderful approach to achieve this goal. Considering that the achievement of a nation is determined by the resources its people have, education is very necessary to produce quality human resources [1].

Previous research: In the application using the k-means algorithm method, it has been proven capable of processing the data entered in the form of values of nahwu, shorof, morals, memorization, presence and solemnity, which is a process where students' values will be selected in the process of grouping students with achievements so that they are fast and accurate [2].

In previous research: classification was carried out using a decision tree algorithm, so it was found that parents' income had no effect on student achievement,

but the distance from home to school had an effect on student achievement [1].

19 In previous research entitled Implementation of K-Means and K-Nearest Neighbors in the Outstanding Student Category. Using the K-means and K-Nearest Neighbors algorithm methods to categorize outstanding students. The final result of the research is that it is hoped that more special attention will be paid to creating the best graduates at SMKN 3 Karawang [3].

This research decided to collect data at SDS Kartika X-6, which is a private elementary school belonging to the Army. SDS Kartika X-6 in determining outstanding students with class achievement scores and school achievement. With what is currently being done, there are many shortcomings and problems faced. Especially considering that there is definitely a lot of data, which will influence the process of student academic grades

with class achievement and school achievement in determining outstanding students.

The application in making achievement is in terms of method and based on class achievement and school achievement, considering that previous research used parental income and the distance from home to school. And where the majority only use the K-Means algorithm [1]. By using 2 methods and academic grades, class performance and school achievement, you will find out how influential it is in determining outstanding students. In this research the K-Means and Decision Tree algorithms will be used in this problem.

2. RESEARCH METHOD

In this particular investigation, the Decision Tree method and the K-Means algorithm were used. Both the Decision Tree method and the K-Means algorithm can be used in the following way, which consists of the stages involved in Figure 1.

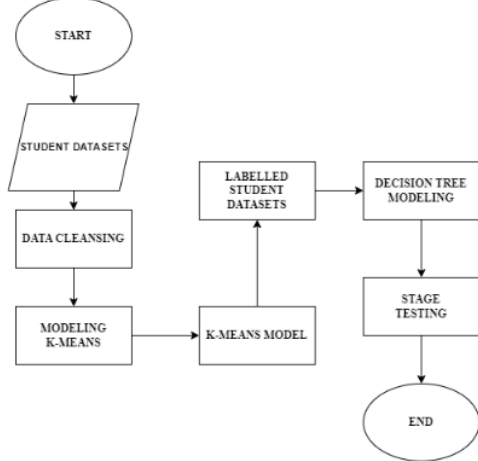


Figure 1. Research Stages

To proceed to the next step. This is where the work Clearing data does with student data sets begins. After conducting an interview with the principal of SDS Kartika X-6, an excel dataset was obtained like that. After the Data Clearing method is complete, the data will be modeled using the K-Means approach with parameter k = 3. This allows the cluster findings to be used as labels for further modeling.

A labeling process will be carried out on the dataset before the Decision Tree method is used for the modeling process. By utilizing measures such as area under the curve (AUC), classification reports, confusion matrices, and accuracy, the final stage is to analyze the Decision Tree algorithm to determine which students are achieving academic grades, class performance and school achievement.

A. K-Means Algorithm

It is said that clustering is a process that tries to organize data according to the similarities between the

data in the cluster. The aim of this process is to make data within a cluster very similar to each other while data between clusters is very different from each other [4], [5][6]. A group of objects or components that are connected to each other is called a cluster. Therefore, clustering analysis will basically result in the formation of a large number of groups [2].

The K-Means algorithm is one of the algorithms that is widely used in clustering because of its simplicity and efficiency and is recognized as one of the top 10 data mining algorithms by IEEE. Among the methods often used in clustering, the K-Means algorithm is one of the algorithms that is often used due to its ease of use, speed, and recognition as a data mining tool [7][8].

With the clustering strategy, researchers often use the K-Means method in combination with it [3]. This is due to the fact that the clustering approach is very effective in finding groups of data. The K-Means Clustering approach divides data into a large number of groups, assigning data that is similar to each other to one group and data that is different to another group [9], [10], [11] [12].

In the K-Means Clustering algorithm, data is divided into several groups, where data in one group has the same characteristics, and data in other groups has different characteristics. The K-Means Clustering method begins with the following stages [9]:

1. Determine k which is the total cluster you want to create
2. K centroid (cluster center point) prefix that will be used randomly.

$$v = \sum_{k=1}^n = 1 \frac{x_i}{N}$$

$$i = 1,2,3 \dots n$$

Formula Determines the initial Centroid. v is the centroid and i is the iteration

3. The distance of each object to each centroid is calculated based on each cluster. The distance between the object and the centroid is calculated using Euclidian Distance.

$$d(x,y) = |x-y| = \sqrt{\sum_{i=1}^n (x_i - y_i)^2}$$

The formula takes into account the distance between centroids.

4. Allocate each object to the nearest centroid.
5. Carry out the iteration, next using the equation determine the position of the new centroid. If the centroid locations are not similar, it means repeating stage 3 [1].

Where :

x : First data point

y : Second data point

n : Number (attributes) in data mining

d(x,y) : Euclidean distance, namely the distance between data at points x and y using mathematical calculations [13].

B. Decision Tree

This modeling can be used to determine the type of information that can be extracted from the data that has been generated. In making decisions with the help of the Decision Tree model, it is at this stage that the Decision Tree algorithm is useful [1]. For the purpose of making predictions about the future, a Decision Tree that has been trained using the C4.5 approach can use a collection of decision rules [14].

In a Decision Tree, internal and root nodes are labeled with attribute names, edges are labeled with attribute values, and leaf nodes are labeled with multiple classes. This makes Decision Trees a fundamental example of a classification technique that can be used on a large number of limited classes [15].

This modeling stage is useful for finding out what patterns or information can be used as useful information from the prepared data. At this modeling stage, the Decision Tree algorithm is used, where this algorithm will be useful for making decisions whose modeling is in the form of a decision tree. In formulating the Decision Tree algorithm, the formula used is as follows [1]:

$$Entropy(S) = \sum_{i=1}^n - P_i \log 2 p_i$$

The formula for calculating entropy

Explanation :

S = Case Collection

S = Number of Partitions S

S = Proportion of

$$Gain(S, A) = entropy(S) - \sum_{i=1}^n \frac{|S_i|}{|S|} entropy(S_i)$$

The formula for calculating Gain

Explanation :

S = Case Collection

S = Attribute

S = Number of Attribute Partitions A

S_i = Number of Cases in Partition i

S = Number of Cases in S [1]

14 3. RESULTS AND DISCUSSION

3.1 Data Collection

This research was made possible by data provided by the SDS Kartika X-6 school. Various

characteristics included in the data include number, gender, Mathematics (MTK), Indonesian Language (BI), Natural Sciences (IPA), Religion, class achievement, and school achievement (with a total of 28 students obtaining data) in table 2. The data collection process consisted of interviewing the Principal of SDS Kartika X-6 with students.

No.	Jenis Kelamin	MTK	BI	IPA	Agama	Prestasi Kelas	Prestasi Sekolah
1	2	88	86	85	82	0	0
2	1	75	79	82	78	0	0
3	2	92	87	88	85	1	0
4	2	87	84	86	84	0	0
5	2	83	84	86	82	0	0
6	1	88	82	88	81	0	0
7	1	87	81	81	78	0	0
8	2	87	84	80	80	0	0
9	1	80	83	88	80	0	0
10	1	82	84	85	80	0	0
11	2	84	82	88	82	0	0
12	1	82	75	82	76	0	0
13	1	86	82	84	79	0	0
14	2	92	86	92	87	0	1
15	2	82	82	88	84	0	0
16	2	84	75	82	75	0	0
17	2	74	75	78	75	0	0
18	2	87	84	90	80	0	0
19	2	78	83	90	81	0	0
20	2	82	79	81	78	0	0
21	1	88	80	85	81	0	0
22	1	88	92	80	90	1	0
23	1	88	77	78	87	0	0
24	1	89	89	91	80	0	1
25	2	87	85	75	80	0	0
26	2	81	80	83	82	0	0
27	1	76	84	77	84	0	0
28	2	80	89	87	81	0	0

Figure 2. Research Dataset

Explanation of figure 2. above:

Gender

1 Boy

2 Women

Class Achievement

0 None

1 Yes

School Achievement

0 None

1 Yes

3.2 Data Cleansing

```
df_null = round(100*(df.isnull().sum()/len(df)),2)
df_null
```

No.	0.0
Jenis Kelamin	0.0
MTK	0.0
BI	0.0
IPA	0.0
Agama	0.0
Prestasi Kelas	0.0
Prestasi Sekolah	0.0
dtype: float64	

Figure 3. Data Cleansing

3.3 K-Means uses Google Colab

As soon as the data is ready to use figure 3. The first step of this research was to develop a model based on the student data set. Resources provided by Google Colab were used in this investigation. This is the first step to finding labels in existing data, namely through the use of K-Means modeling figure 4.

```

from sklearn.cluster import KMeans
df = pd.read_csv('dataset_data skbr.csv')
df
    
```

No.	Jenis Kelamin	MTK	BI	IPA	Agama	Prestasi Kelas	Prestasi Sekolah
0	1	2	88	85	82	0	0
1	2	1	75	79	82	78	0
2	3	2	52	87	88	85	1
3	4	2	87	84	86	84	0
4	5	2	83	84	86	82	0
5	6	1	88	82	88	81	0
6	7	1	87	81	81	78	0
7	8	2	87	84	88	88	0
8	9	1	80	83	88	88	0
9	10	1	82	84	85	88	0
10	11	2	84	82	88	82	0
11	12	1	82	75	82	76	0
12	13	1	88	82	84	79	0
13	14	2	92	88	92	87	0
14	15	1	80	87	88	84	0

Figure 4. Dataset for K-Means Modeling

By using MTK, BI, IPA and Religion data as a basis, clustering was carried out. In dividing the k-values into three different groups, and later we will use these groupings as labels in the data set relating to students. The clustering process is used to get the average value of the current dataset. This is the reason why the value of k is divided by three. This ultimately results in a model that appears as follows in figure 5 and figure 6:

```

from sklearn.cluster import KMeans
kmean = KMeans(n_clusters=3)
kmean

KMeans(n_clusters=3)

y_cluster = kmean.fit_predict(x_train)

array([0, 1, 0, 0, 0, 0, 1, 2, 0, 0, 0, 1, 0, 0, 0, 1, 1, 0, 0, 1, 0, 2,
       2, 0, 2, 1, 2, 0], dtype=int32)
    
```

Figure 5. K-Means Algorithm Model

```

kmean.cluster_centers_

array([[0.63888889, 0.5625, 0.73897059, 0.45416667],
       [0.37301587, 0.15966387, 0.3697479, 0.16190476],
       [0.62222222, 0.55294118, 0.17647059, 0.61333333]])
    
```

Figure 6. Centroid K-Means

3.4 Decision Tree using Google Colab

Next, the student dataset will be labeled according to the results of the clustering model trained using K-Means before being applied to the data. Next, a classification method is used, namely the Decision Tree algorithm, to model the student dataset which has been labeled in figure 7 [1].

```

df["Cluster"] = df["Cluster"].replace([0,1,2],["Sangat Baik","Baik","Cukup Baik"])
df
    
```

No.	Jenis Kelamin	MTK	BI	IPA	Agama	Prestasi Kelas	Prestasi Sekolah	Cluster
0	1	2	88	85	82	0	0	Sangat Baik
1	2	1	75	79	82	78	0	Baik
2	3	2	52	87	88	85	1	Sangat Baik
3	4	2	87	84	86	84	0	Sangat Baik
4	5	2	83	84	86	82	0	Sangat Baik
5	6	1	88	82	88	81	0	Sangat Baik
6	7	1	87	81	81	78	0	Baik
7	8	2	87	84	88	88	0	Cukup Baik
8	9	1	80	83	88	88	0	Sangat Baik
9	10	1	82	84	85	88	0	Sangat Baik
10	11	2	84	82	88	82	0	Sangat Baik
11	12	1	82	75	82	76	0	Baik
12	13	1	88	82	84	79	0	Sangat Baik
13	14	2	92	88	92	87	0	1 Sangat Baik

Figure 7. Decision Tree Datasets

The attributes used are MTK, BI, Science and Religion, class achievement and school achievement. With clusters that have been labeled from K-Means figure 8.

```

[97] atribut= ["MTK","BI","IPA","Agama","Prestasi Kelas","Prestasi Sekolah"]
[98] data = df.loc[:,atribut]
target = df["Cluster"]
[99] x_train, x_test, y_train, y_test, = train_test_split(data, target, test_size=0.2)
[100] from sklearn import tree
modelKlasifikasi = tree.DecisionTreeClassifier(criterion='entropy')
modelKlasifikasi = modelKlasifikasi.fit(x_train, y_train)
    
```

Figure 8. Decision Tree Attributes

Modeling is done by dividing the labeled student dataset into training data and also random_state. The data used is Science, Religion and Cluster, so the model results are in figure 9:

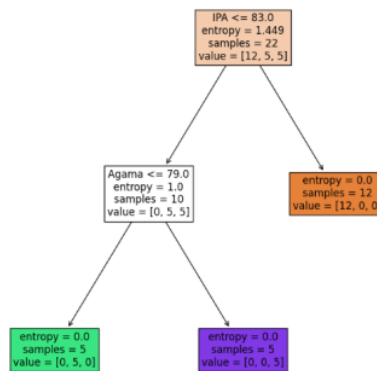


Figure 9. Decision Tree Algorithm Modeling

To make it easier to obtain information from the Decision Tree modeling that has been carried out, we will detail or explain the model that was successfully executed. This is the explanation in figure 10:

```

30 from sklearn.tree import export_text
r = export_text(model_klasifikasi, feature_names=atribut)
print(r)

|--- IPA <= 83.00
|   |--- Agama <= 79.00
|   |   |--- class: 1
|   |   |--- Agama > 79.00
|   |   |--- class: 2
|   |--- IPA > 83.00
|   |--- class: 0

```

Figure 10. Explanation of the Decision Tree Model

3.5 Decision Tree Testing

In this section, we will perform a number of predictions to see whether the Decision Tree approach meets the research prediction requirements. This result can only be achieved with the use of some classification functions. In the context of Decision Tree modeling, the first step taken is making predictions, which will then be assessed for accuracy, confusion matrix, classification report, and AUC value. All processes through the use of Google Colab. The following is a list of test results in figure 11 and figure 12:

```

14 hasil_prediksi = model.predict(x_train)

from sklearn.metrics import accuracy_score
print(accuracy_score(hasil_prediksi, y_train))

from sklearn.metrics import confusion_matrix
print(confusion_matrix(hasil_prediksi, y_train))

from sklearn.metrics import classification_report
print(classification_report(hasil_prediksi, y_train))

1.0
[[12  0  0]
 [ 0  5  0]
 [ 0  0  5]]
precision  recall  f1-score  support

 0      1.00    1.00    1.00    12
 1      1.00    1.00    1.00    5
 2      1.00    1.00    1.00    5

accuracy          1.00    22
macro avg         1.00    22
weighted avg      1.00    22

```

Figure 11. accuracy, confusion matrix, classification report

```

04 #nilaiAUC
tree_probs = model.predict_proba(x_test)
tree_probs = tree_probs[:,1]
from sklearn.metrics import roc_auc_score
from sklearn import tree
tree_auc = roc_auc_score(y_test, tree_probs)
print('AUCROC :%.3f' % (tree_auc))

AUCROC :0.750

```

Figure 12. AUC value

In the analysis of outstanding students, it can be seen from the K-Means and Decision Tree algorithms that have been created. Modeling the dataset in K-Means which has been labeled as follows:

- A. Very Good, there are 16 students in the very good category.
- B. Good, there are 7 students in the good category.
- C. Fairly Good, there are 5 students in the quite good category.

The results of determining the cluster are Very Good, Good and Fairly Good by adding up the distance calculation values for each cluster member in the K-Means algorithm, then sorting them from the values Very Good, Good and Fairly Good.

Table 1. K-Means Algorithm Results

Algoritma	Cluster	Jumlah	Kategori
K-Means	0	16	Sangat Baik
	1	7	Baik
	2	5	Cukup Baik

Decision Tree modeling based on science values and religious values. The Decision Tree approach was able to achieve a prediction accuracy score of 100% and an area under the curve (AUC) of 0.750 during the testing process. That in this research, in determining outstanding students with science scores and religion scores, the Decision Tree algorithm was used but with different attributes.

In previous research, the Decision Tree algorithm was not suitable to use. The results of the research are different in several ways from the results of this research, in that the Decision Tree has an influence in determining outstanding students, namely in terms of methods and based on the many attributes used. Previous research used parental income and distance from home to school and the majority only used the K-Means algorithm.

4. CONCLUSION

From the research that has been carried out in applying the clustering method using K-Means and also the Decision Tree algorithm classification method using a student dataset containing number, gender, MTK, BI, Science, Religion, class achievement and school achievement. Used in this research, judging from the science and religion scores, the application in determining high achieving students is suitable.

Very Good, Good, and Fair are three separate quality categories considered related to the K-Means method. Furthermore, the level of accuracy of the Decision Tree algorithm's predictions is 100%, and the area under the curve (AUC) is 0.750. To determine outstanding students using MTK, BI, Science, Religion, Class Achievement and School Achievement, it was found that they had an influence in determining outstanding students.

Accuracy in determining outstanding students by looking at science and religion scores, by selecting several academic scores, class achievements and school achievements in determining outstanding students.

For further research, it is recommended to add other attributes to determine outstanding students and increase the amount of data in the dataset.

5. REFERENCES

- [1] M. B. Abdul Majid, Y. M. Cani, and U. Enri, "Penerapan Algoritma K-Means dan Decision Tree Dalam Analisis Prestasi Siswa Sekolah Menengah Kejuruan," *Jurnal Sistem Komputer dan Informatika (JSON)*, vol. 4, no. 2, p. 355, Dec. 2022, doi: 10.30865/json.v4i2.5299.
- [2] H. Yuwafi, F. Marisa, and I. Darma Wijaya, "IMPLEMENTASI DATA MINING UNTUK MENENTUKAN SANTRI BERPRESTASI DI PP.MANAARULHUDA DENGAN METODE CLUSTERING ALGORITMA K-MEANS," 2019. doi: DOI: <http://dx.doi.org/10.53567/spirit.v11i1.115>.
- [3] T. Widiyanti, S. Shofiah Hilabi, A. Hananto, Tukino, and E. Novalia, "Implementasi K-Means dan K-Nearest Neighbors pada Kategori Siswa Berprestasi," *Implementasi K-Means dan K-Nearest Neighbors pada Kategori Siswa Berprestasi*, vol. 5, 2023, doi: <https://doi.org/10.37034/jidt.v5i1.255>.
- [4] S. Dewi, S. Defit, and Y. Yuhandri, "Akurasi Pemetaan Kelompok Belajar Siswa Menuju Prestasi Menggunakan Metode K-Means," *Jurnal Sistim Informasi dan Teknologi*, pp. 28–33, Mar. 2021, doi: 10.37034/jsisfotek.v3i1.40.
- [5] J. Hutagalung, Y. Hendro Syahputra, Z. Pertiwi Tanjung, S. Triguna Dharma, and J. I. Pintu Air, "Pemetaan Siswa Kelas Unggulan Menggunakan Algoritma K-Means Clustering," *Hal AH Nasution*, vol. 9, no. 1, 2022, [Online]. Available: <http://jurnal.mdp.ac.id>
- [6] M. Sholeh and K. Aeni, "PERBANDINGAN EVALUASI METODE DAVIES BOULDIN, ELBOW DAN SILHOUETTE PADA MODEL CLUSTERING DENGAN MENGGUNAKAN ALGORITMA K MEANS," 2023. doi: <http://dx.doi.org/10.30998/string.v8i1.16388>.
- [7] G. Gustientiedina, M. H. Adiya, and Y. Desnelita, "Penerapan Algoritma K-Means Untuk Clustering Data Obat-Obatan," *Jurnal Nasional Teknologi dan Sistem Informasi*, vol. 5, no. 1, pp. 17–24, Apr. 2019, doi: 10.25077/teknosi.v5i1.2019.17-24.
- [8] A. Sulistiyawati and E. Supriyanto, "Implementasi Algoritma K-means Clustering dalam Penentuan Siswa Kelas Unggulan," vol. 15, no. 2.
- [9] S. Kurniawan, A. M. Siregar, and H. Y. Novita, "Penerapan Algoritma K-Means dan Fuzzy C-Means Dalam Mengelompokkan Prestasi Siswa Berdasarkan Nilai Akademik," vol. IV, no. 1, 2023.
- [10] A. Bahauddin, A. Fatmawati, and F. Permata Sari, "ANALISIS CLUSTERING PROVINSI DI INDONESIA BERDASARKAN TINGKAT KEMISKINAN MENGGUNAKAN ALGORITMA K-MEANS," vol. 4, pp. 1–8, 2021.
- [11] E. Femando, P. Mudjiraharjo, and M. Aswin, "IMPLEMENTASI PENDEKATAN COLLABORATIVE FILTERING DAN K-MEANS CLUSTERING PADA SISTEM REKOMENDASI MATA KULIAH," *Jurnal Informatika dan Komputer) Akreditasi KEMENRISTEKDIKTI*, vol. 5, no. 2, 2022, doi: 10.33387/jiko.
- [12] H. Priyatman, F. Sajid, and D. Haldivany, "JEPIN (Jurnal Edukasi dan Penelitian Informatika) Klasterisasi Menggunakan Algoritma K-Means Clustering untuk Memprediksi Waktu Kelulusan Mahasiswa," 2019.
- [13] R. Anggraini, E. Haerani, J. Jasril, and I. Afrianty, "Pengelompokan Penyakit Pasien Menggunakan Algoritma K-Means," *JURIKOM (Jurnal Riset Komputer)*, vol. 9, no. 6, p. 1840, Dec. 2022, doi: 10.30865/jurikom.v9i6.5145.
- [14] F. Salsabila and S. Maulida Intani, "IMPLEMENTASI ALGORITMA K-MEANS DAN C4.5 DALAM MENENTUKAN TINGKAT PENYEBARAN COVID-19 DI INDONESIA," *Kata Kunci: Algoritma C4*, vol. 7, no. 1, 2021.
- [15] A. H. Nasrullah, "IMPLEMENTASI ALGORITMA DECISION TREE UNTUK KLASIFIKASI PRODUK LARIS," vol. 7, no. 2, 2021, doi: <https://doi.org/10.35329/jiik.v7i2.203>.

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"PENERAPAN ALGORITMA K-MEANS
CLUSTERING BERDASARKAN HASIL
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