

- Membuat klusterisasi bunga iris menggunakan dataset dari <https://www.kaggle.com/dataset/uciml/iris>. Menjalankan algoritma k – means untuk nilai k yang berbeda ( k = 2, k = 3, k = 4, k = 5, k = 6, dan k = 7 ).
- Menentukan berapa cluster yang paling baik untuk mengelompokkan spesies bunga iris tersebut menggunakan elbow method.

Hasil:

The image displays two screenshots of the Orange3 data mining software interface, showing the results of K-means clustering on the Iris dataset. The top screenshot shows the results for k=3, and the bottom screenshot shows the results for k=5. Both screenshots show a table with columns: Row No., Id, cluster, Id, SepalLength..., SepalWidth..., PetalLength..., PetalWidth..., and Species. The 'Species' column contains 'Iris-setosa' for all rows. The 'cluster' column shows the assigned cluster for each row. The 'Id' column shows the original ID of each row. The 'SepalLength...' column shows the sepal length for each row. The 'SepalWidth...' column shows the sepal width for each row. The 'PetalLength...' column shows the petal length for each row. The 'PetalWidth...' column shows the petal width for each row.

Row No.	Id	cluster	Id	SepalLength...	SepalWidth...	PetalLength...	PetalWidth...	Species
1	1	cluster_1	1	5.100	3.500	1.400	0.200	Iris-setosa
2	2	cluster_1	2	4.900	3	1.400	0.200	Iris-setosa
3	3	cluster_1	3	4.700	3.200	1.300	0.200	Iris-setosa
4	4	cluster_1	4	4.600	3.100	1.500	0.200	Iris-setosa
5	5	cluster_1	5	5	3.600	1.400	0.200	Iris-setosa
6	6	cluster_1	6	5.400	3.900	1.700	0.400	Iris-setosa
7	7	cluster_1	7	4.600	3.400	1.400	0.300	Iris-setosa
8	8	cluster_1	8	5	3.400	1.500	0.200	Iris-setosa
9	9	cluster_1	9	4.400	2.900	1.400	0.200	Iris-setosa
10	10	cluster_1	10	4.900	3.100	1.500	0.100	Iris-setosa
11	11	cluster_1	11	5.400	3.700	1.500	0.200	Iris-setosa
12	12	cluster_1	12	4.800	3.400	1.600	0.200	Iris-setosa
13	13	cluster_1	13	4.800	3	1.400	0.100	Iris-setosa
14	14	cluster_1	14	4.300	3	1.100	0.100	Iris-setosa
15	15	cluster_1	15	5.800	4	1.200	0.200	Iris-setosa
16	16	cluster_1	16	5.700	4.400	1.500	0.400	Iris-setosa
17	17	cluster_1	17	5.400	3.900	1.300	0.400	Iris-setosa
18	18	cluster_1	18	5.100	3.500	1.400	0.300	Iris-setosa
19	19	cluster_1	19	5.700	3.600	1.700	0.300	Iris-setosa
20	20	cluster_1	20	5.100	3.600	1.300	0.300	Iris-setosa
21	21	cluster_1	21	5.400	3.400	1.700	0.200	Iris-setosa
22	22	cluster_1	22	5.100	3.700	1.500	0.400	Iris-setosa
23	23	cluster_1	23	4.600	3.600	1	0.200	Iris-setosa
24	24	cluster_1	24	5.100	3.300	1.700	0.500	Iris-setosa
25	25	cluster_1	25	4.800	3.400	1.900	0.200	Iris-setosa
26	26	cluster_1	26	5	3	1.600	0.200	Iris-setosa
27	27	cluster_1	27	5	3.400	1.600	0.400	Iris-setosa
28	28	cluster_1	28	5.200	3.500	1.500	0.200	Iris-setosa
29	29	cluster_1	29	5.200	3.400	1.400	0.200	Iris-setosa
30	30	cluster_1	30	4.700	3.200	1.600	0.200	Iris-setosa

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Let's do some data science.

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**Result History** **ExampleSet (Clustering)** **Cluster Model (Clustering)**

Open in **Turbo Prep** **Auto Model** **Interactive Analysis** Filter (150 / 150 examples): all

Row No.	Id	cluster	Id	SepalLength...	SepalWidth...	PetalLength...	PetalWidth...	Species
1	1	cluster_0	1	5.100	5.500	1.400	0.200	iris-setosa
2	2	cluster_0	2	4.900	5	1.400	0.200	iris-setosa
3	3	cluster_0	3	4.700	3.200	1.300	0.200	iris-setosa
4	4	cluster_0	4	4.600	3.100	1.500	0.200	iris-setosa
5	5	cluster_0	5	5	3.600	1.400	0.200	iris-setosa
6	6	cluster_0	6	5.400	3.900	1.700	0.400	iris-setosa
7	7	cluster_0	7	4.600	3.400	1.400	0.300	iris-setosa
8	8	cluster_0	8	5	3.400	1.500	0.200	iris-setosa
9	9	cluster_0	9	4.400	2.800	1.400	0.200	iris-setosa
10	10	cluster_0	10	4.900	3.100	1.500	0.100	iris-setosa
11	11	cluster_0	11	5.400	3.700	1.500	0.200	iris-setosa
12	12	cluster_0	12	4.800	3.400	1.600	0.200	iris-setosa
13	13	cluster_0	13	4.800	3	1.400	0.100	iris-setosa
14	14	cluster_0	14	4.300	3	1.100	0.100	iris-setosa
15	15	cluster_0	15	5.800	4	1.200	0.200	iris-setosa
16	16	cluster_0	16	5.700	4.400	1.500	0.400	iris-setosa
17	17	cluster_0	17	5.400	3.900	1.300	0.400	iris-setosa
18	18	cluster_0	18	5.100	3.500	1.400	0.300	iris-setosa
19	19	cluster_0	19	5.700	3.800	1.700	0.300	iris-setosa
20	20	cluster_0	20	5.100	3.800	1.500	0.300	iris-setosa
21	21	cluster_0	21	5.400	3.400	1.700	0.200	iris-setosa
22	22	cluster_0	22	5.100	3.700	1.500	0.400	iris-setosa
23	23	cluster_0	23	4.600	3.600	1	0.200	iris-setosa
24	24	cluster_0	24	5.100	3.300	1.700	0.500	iris-setosa
25	25	cluster_0	25	4.800	3.400	1.900	0.200	iris-setosa
26	26	cluster_0	26	5	3	1.600	0.200	iris-setosa
27	27	cluster_0	27	5	3.400	1.600	0.400	iris-setosa
28	28	cluster_0	28	5.200	3.500	1.500	0.200	iris-setosa
29	29	cluster_0	29	5.200	1.400	1.400	0.200	iris-setosa
30	30	cluster_0	30	4.700	3.200	1.600	0.200	iris-setosa

ExampleSet (150 examples, 2 special attributes, 6 regular attributes)

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**Result History** **ExampleSet (Clustering)** **Cluster Model (Clustering)**

Open in **Turbo Prep** **Auto Model** **Interactive Analysis** Filter (150 / 150 examples): all

Row No.	Id	cluster	Id	SepalLength...	SepalWidth...	PetalLength...	PetalWidth...	Species
1	1	cluster_4	1	5.100	3.500	1.400	0.200	iris-setosa
2	2	cluster_4	2	4.900	3	1.400	0.200	iris-setosa
3	3	cluster_4	3	4.700	3.200	1.300	0.200	iris-setosa
4	4	cluster_4	4	4.600	3.100	1.500	0.200	iris-setosa
5	5	cluster_4	5	5	3.600	1.400	0.200	iris-setosa
6	6	cluster_4	6	5.400	3.900	1.700	0.400	iris-setosa
7	7	cluster_4	7	4.600	3.400	1.400	0.300	iris-setosa
8	8	cluster_4	8	5	3.400	1.500	0.200	iris-setosa
9	9	cluster_4	9	4.400	2.800	1.400	0.200	iris-setosa
10	10	cluster_4	10	4.900	3.100	1.500	0.100	iris-setosa
11	11	cluster_4	11	5.400	3.700	1.500	0.200	iris-setosa
12	12	cluster_4	12	4.800	3.400	1.600	0.200	iris-setosa
13	13	cluster_4	13	4.800	3	1.400	0.100	iris-setosa
14	14	cluster_4	14	4.300	3	1.100	0.100	iris-setosa
15	15	cluster_4	15	5.800	4	1.200	0.200	iris-setosa
16	16	cluster_4	16	5.700	4.400	1.500	0.400	iris-setosa
17	17	cluster_4	17	5.400	3.900	1.300	0.400	iris-setosa
18	18	cluster_4	18	5.100	3.500	1.400	0.300	iris-setosa
19	19	cluster_4	19	5.700	3.800	1.700	0.300	iris-setosa
20	20	cluster_4	20	5.100	3.800	1.500	0.300	iris-setosa
21	21	cluster_4	21	5.400	3.400	1.700	0.200	iris-setosa
22	22	cluster_4	22	5.100	3.700	1.500	0.400	iris-setosa
23	23	cluster_4	23	4.600	3.600	1	0.200	iris-setosa
24	24	cluster_4	24	5.100	3.300	1.700	0.500	iris-setosa
25	25	cluster_4	25	4.800	3.400	1.900	0.200	iris-setosa
26	26	cluster_4	26	5	3	1.600	0.200	iris-setosa
27	27	cluster_4	27	5	3.400	1.600	0.400	iris-setosa
28	28	cluster_4	28	5.200	3.500	1.500	0.200	iris-setosa
29	29	cluster_2	29	5.200	3.400	1.400	0.200	iris-setosa
30	30	cluster_2	30	4.700	3.200	1.600	0.200	iris-setosa

ExampleSet (150 examples, 2 special attributes, 6 regular attributes)

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**Result History** ExampleSet (Clustering) Cluster Model (Clustering) Filter (150 / 150 examples) all

**Data**

Row No.	Id	cluster	Id	SepaLengt...	SepaWidth...	PetaLengt...	PetaWidth...	Species
1	1	cluster_0	1	5.100	3.500	1.400	0.200	Hy-setosa
2	2	cluster_0	2	4.900	3	1.400	0.200	Hy-setosa
3	3	cluster_0	3	4.700	3.200	1.300	0.200	Hy-setosa
4	4	cluster_0	4	4.600	3.100	1.500	0.200	Hy-setosa
5	5	cluster_0	5	5	3.600	1.400	0.200	Hy-setosa
6	6	cluster_0	6	5.400	3.900	1.700	0.400	Hy-setosa
7	7	cluster_0	7	4.600	3.400	1.400	0.300	Hy-setosa
8	8	cluster_0	8	5	3.400	1.500	0.200	Hy-setosa
9	9	cluster_0	9	4.400	2.900	1.400	0.200	Hy-setosa
10	10	cluster_0	10	4.900	3.100	1.500	0.100	Hy-setosa
11	11	cluster_0	11	5.400	3.700	1.500	0.200	Hy-setosa
12	12	cluster_0	12	4.800	3.400	1.600	0.200	Hy-setosa
13	13	cluster_0	13	4.800	3	1.400	0.100	Hy-setosa
14	14	cluster_0	14	4.300	3	1.100	0.100	Hy-setosa
15	15	cluster_0	15	5.800	4	1.200	0.200	Hy-setosa
16	16	cluster_0	16	5.700	4.400	1.500	0.400	Hy-setosa
17	17	cluster_0	17	5.400	3.900	1.300	0.400	Hy-setosa
18	18	cluster_0	18	5.100	3.500	1.400	0.300	Hy-setosa
19	19	cluster_0	19	5.700	3.800	1.700	0.300	Hy-setosa
20	20	cluster_0	20	5.100	3.800	1.500	0.300	Hy-setosa
21	21	cluster_0	21	5.400	3.400	1.700	0.200	Hy-setosa
22	22	cluster_0	22	5.100	3.700	1.500	0.400	Hy-setosa
23	23	cluster_0	23	4.600	3.600	1	0.200	Hy-setosa
24	24	cluster_0	24	5.100	3.300	1.700	0.500	Hy-setosa
25	25	cluster_0	25	4.800	3.400	1.900	0.200	Hy-setosa
26	26	cluster_0	26	5	3	1.600	0.200	Hy-setosa
27	27	cluster_0	27	5	3.400	1.600	0.400	Hy-setosa
28	28	cluster_0	28	5.200	3.500	1.500	0.200	Hy-setosa
29	29	cluster_0	29	5.200	3.400	1.400	0.200	Hy-setosa
30	30	cluster_0	30	4.700	3.200	1.600	0.200	Hy-setosa

ExampleSet (150 examples, 2 special attributes, 6 regular attributes)

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**Result History** ExampleSet (Clustering) Cluster Model (Clustering) Filter (150 / 150 examples) all

**Data**

Row No.	Id	cluster	Id	SepaLengt...	SepaWidth...	PetaLengt...	PetaWidth...	Species
1	1	cluster_0	1	5.100	3.500	1.400	0.200	Hy-setosa
2	2	cluster_0	2	4.900	3	1.400	0.200	Hy-setosa
3	3	cluster_0	3	4.700	3.200	1.300	0.200	Hy-setosa
4	4	cluster_0	4	4.600	3.100	1.500	0.200	Hy-setosa
5	5	cluster_0	5	5	3.600	1.400	0.200	Hy-setosa
6	6	cluster_0	6	5.400	3.900	1.700	0.400	Hy-setosa
7	7	cluster_0	7	4.600	3.400	1.400	0.300	Hy-setosa
8	8	cluster_0	8	5	3.400	1.500	0.200	Hy-setosa
9	9	cluster_0	9	4.400	2.900	1.400	0.200	Hy-setosa
10	10	cluster_0	10	4.900	3.100	1.500	0.100	Hy-setosa
11	11	cluster_0	11	5.400	3.700	1.500	0.200	Hy-setosa
12	12	cluster_0	12	4.800	3.400	1.600	0.200	Hy-setosa
13	13	cluster_0	13	4.800	3	1.400	0.100	Hy-setosa
14	14	cluster_0	14	4.300	3	1.100	0.100	Hy-setosa
15	15	cluster_0	15	5.800	4	1.200	0.200	Hy-setosa
16	16	cluster_0	16	5.700	4.400	1.500	0.400	Hy-setosa
17	17	cluster_0	17	5.400	3.900	1.300	0.400	Hy-setosa
18	18	cluster_0	18	5.100	3.500	1.400	0.300	Hy-setosa
19	19	cluster_0	19	5.700	3.800	1.700	0.300	Hy-setosa
20	20	cluster_0	20	5.100	3.800	1.500	0.300	Hy-setosa
21	21	cluster_0	21	5.400	3.400	1.700	0.200	Hy-setosa
22	22	cluster_0	22	5.100	3.700	1.500	0.400	Hy-setosa
23	23	cluster_0	23	4.600	3.600	1	0.200	Hy-setosa
24	24	cluster_0	24	5.100	3.300	1.700	0.500	Hy-setosa
25	25	cluster_0	25	4.800	3.400	1.900	0.200	Hy-setosa
26	26	cluster_0	26	5	3	1.600	0.200	Hy-setosa
27	27	cluster_0	27	5	3.400	1.600	0.400	Hy-setosa
28	28	cluster_0	28	5.200	3.500	1.500	0.200	Hy-setosa
29	29	cluster_0	29	5.200	3.400	1.400	0.200	Hy-setosa
30	30	cluster_0	30	4.700	3.200	1.600	0.200	Hy-setosa

ExampleSet (150 examples, 2 special attributes, 6 regular attributes)