

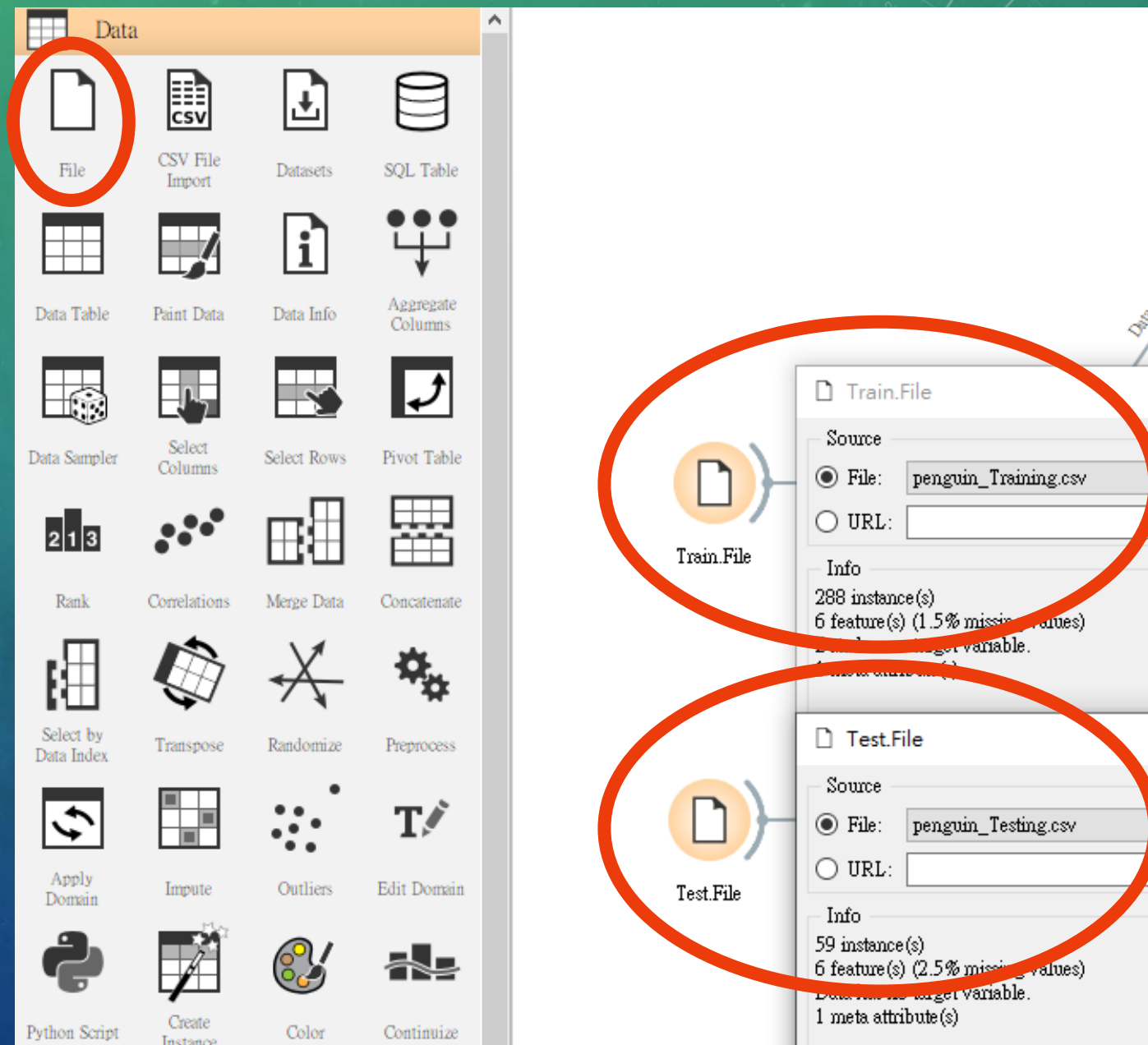
The background features a gradient from green at the top to blue at the bottom. On the left side, there are several concentric circular patterns and a scale with numerical markings from 140 to 260. The text is positioned on the right side of the image.

ORANGE 3 預測

SVM/ KNN/ K-MEANS

導入資料

選擇Data分類，File
屬性



The screenshot displays the Orange3 Data File widget configuration interface. The left pane shows the 'Data' category with the 'File' icon circled in red. The right pane shows the configuration for two data files, 'Train.File' and 'Test.File', both of which are also circled in red. Each file configuration includes a 'Source' section with 'File' selected and a path to a CSV file, and an 'Info' section providing statistics on instances, features, and missing values.

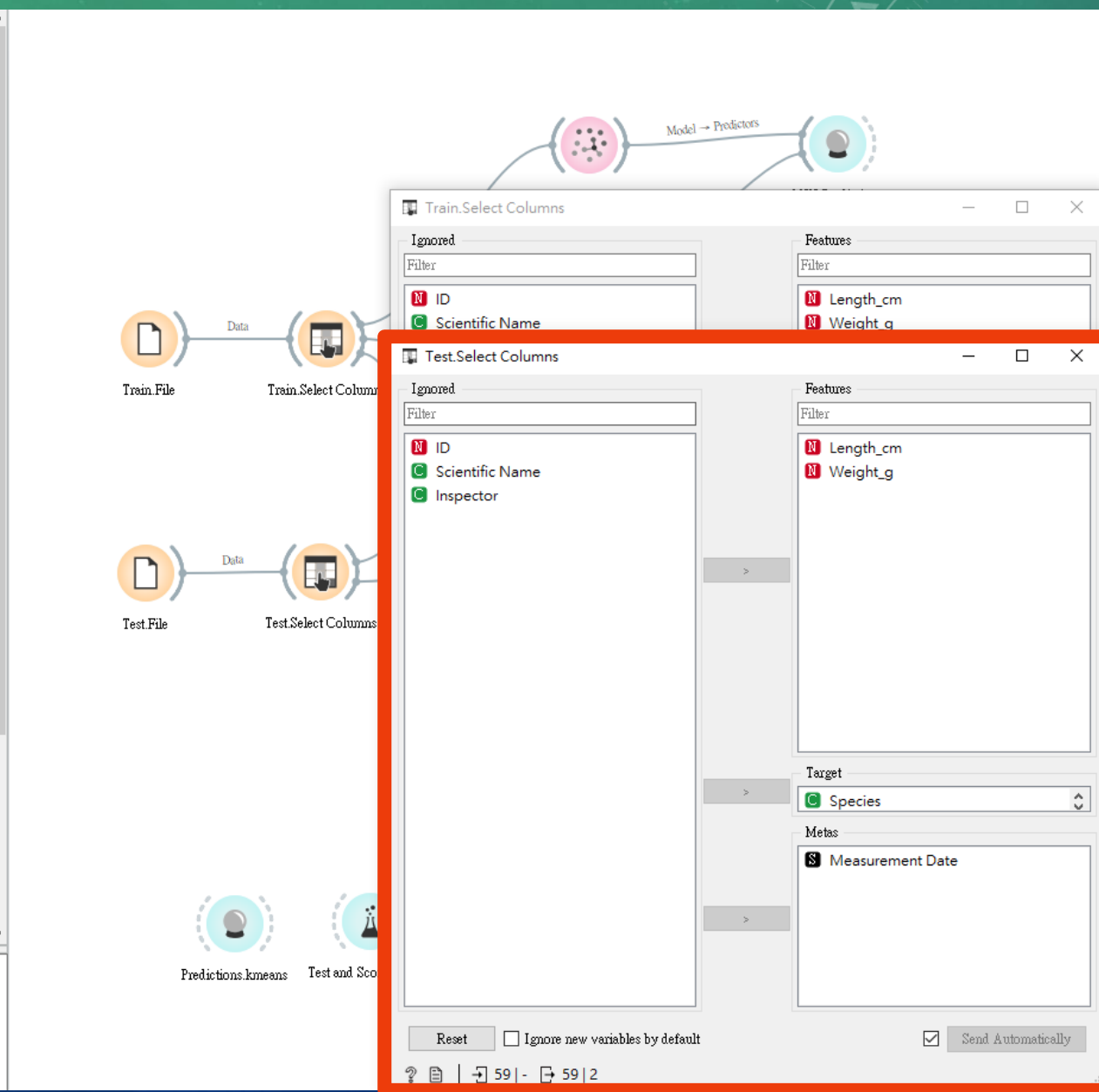
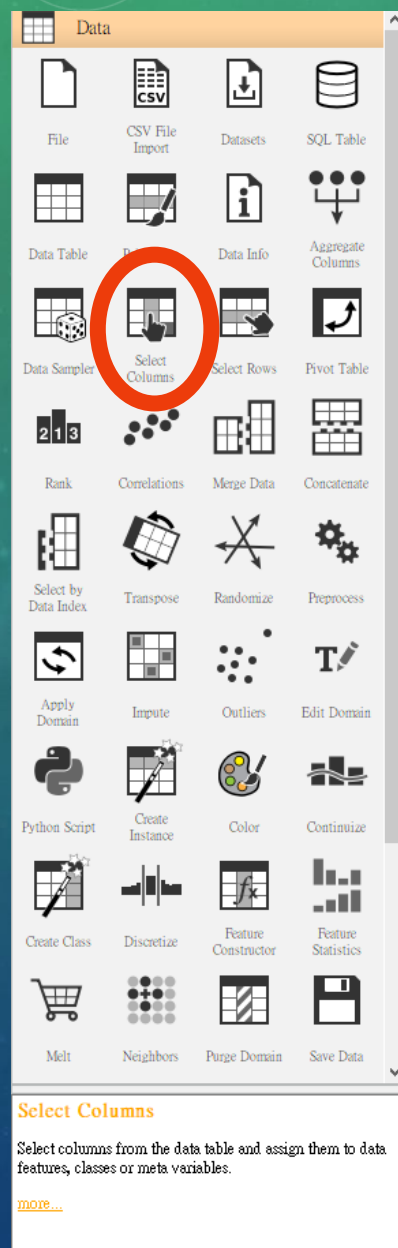
| File | Source | Info |
|------------|----------------------------|---|
| Train.File | File: penguin_Training.csv | 288 instance(s) 6 feature(s) (1.5% missing values) Data has no target variable. |
| Test.File | File: penguin_Testing.csv | 59 instance(s) 6 feature(s) (2.5% missing values) Data has no target variable. 1 meta attribute(s) |

設定篩選

設定Train與Test資料庫資料篩選

將"Species"設定為目標(Target)

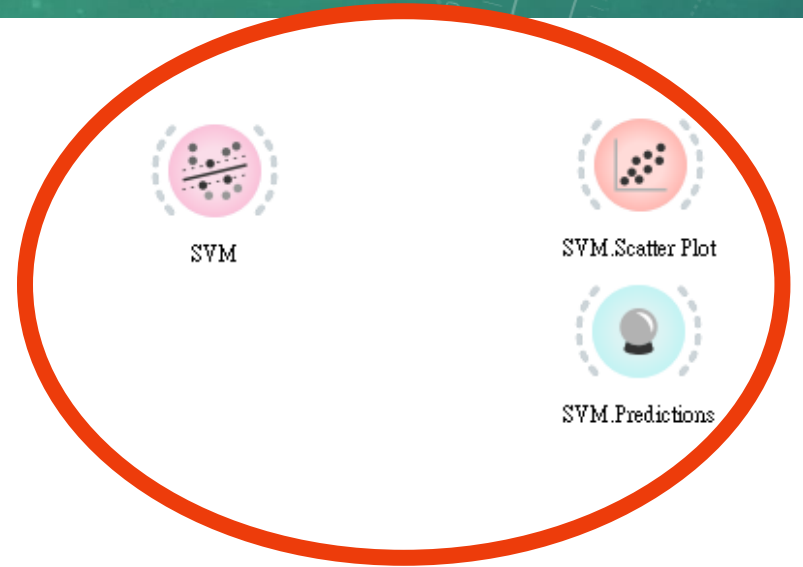
將"ID"、"Scientific Name"、"Inspector"設定為忽略數值。



建立SVM

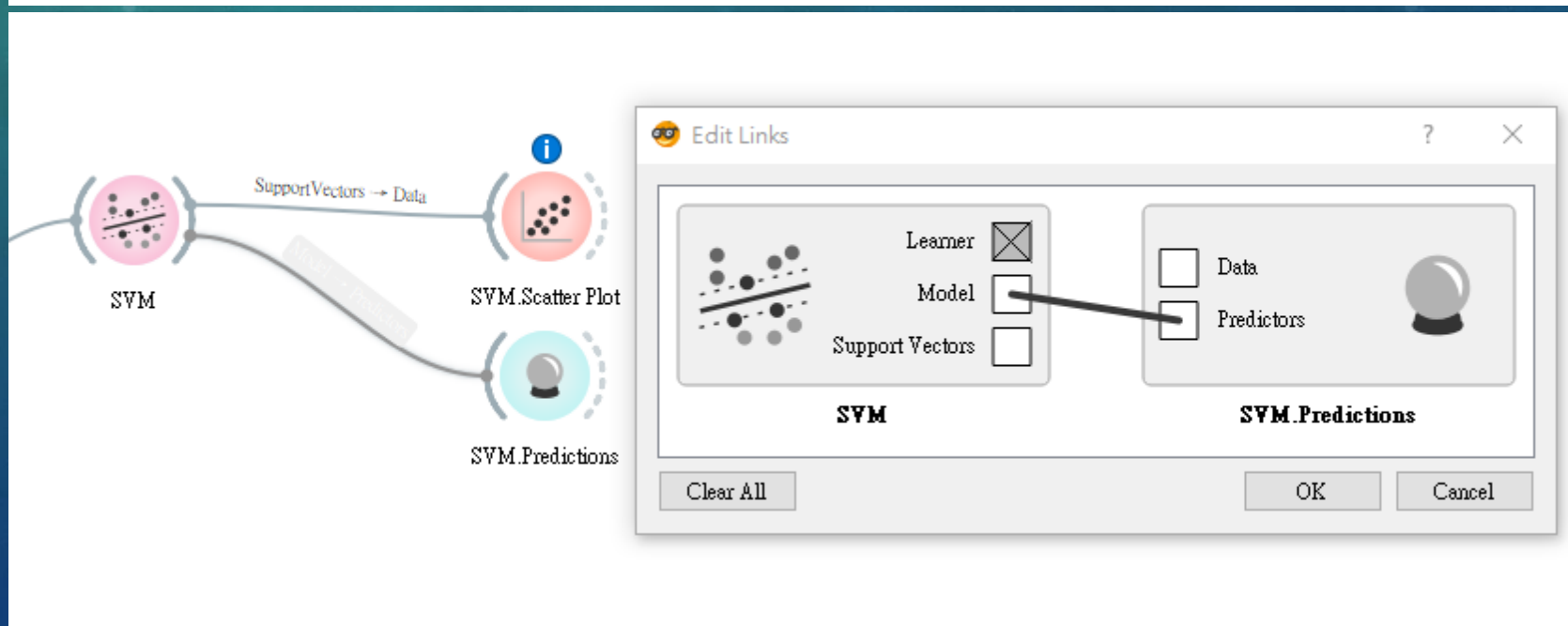
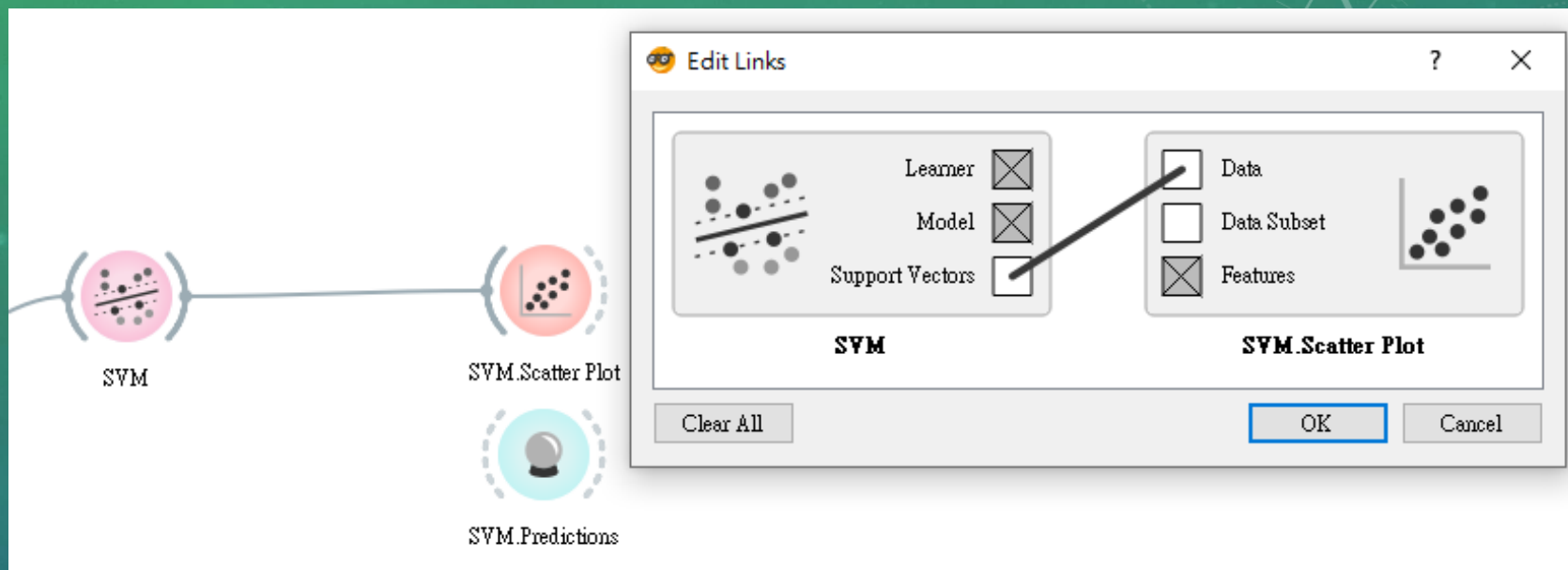
至左側抓取

“SVM”、“Scatter Plot”、
“Predictions”模組



連結SVM

將SVM預測模型串接

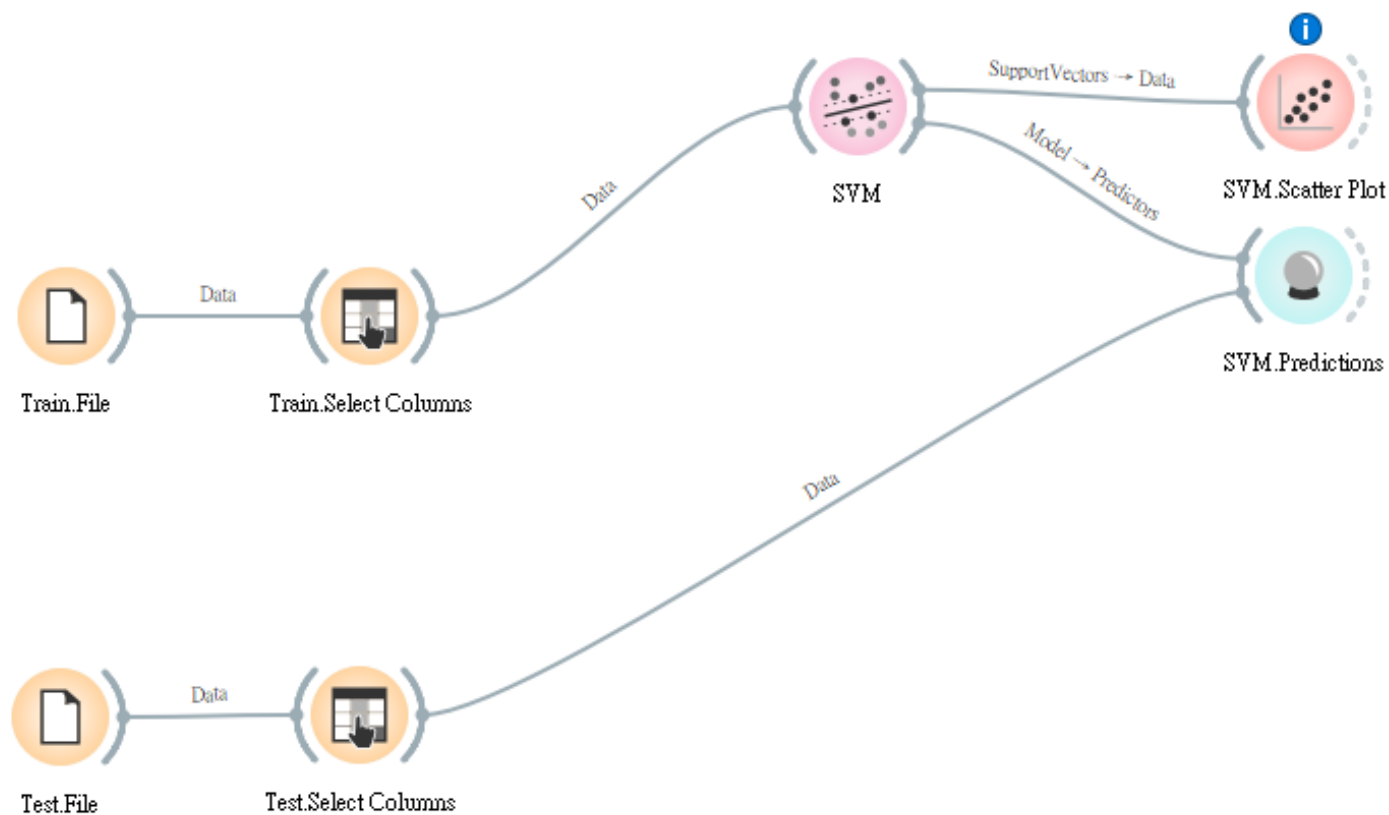


連結SVM

將訓練資料庫連結到
SVM

將測試資料庫連結到
預測

完成圖如右



調整SVM

連點“SVM”與
“Predictions”來開
啟右圖視窗

調整SVM模型細部
設定，並觀察AUC
等準確度指標變化
來調整最佳設定值

The screenshot displays the Orange3 interface. At the top, a workflow diagram shows 'Data' connected to 'SVM', which is then connected to 'SVM.Scatter Plot' and 'SVM.Predictions'. The 'SVM' widget is highlighted with a red circle. Below it, the 'SVM' configuration window is open, showing the 'SVM' type selected, with 'Cost (C)' set to 1.00, 'Regression epsilon (ε)' set to 0.10, and 'Kernel' set to 'RBF'. The 'SVM.Predictions' widget is also highlighted with a red circle. It displays a table of prediction results for 19 data points, each with a probability distribution for four species: Chinstrap penguin, Galapagos penguin, Gentoo penguin, and Little penguin. Below the table, a summary table shows the overall performance metrics for the SVM model.

| Species | Measurement Date | Length_cm | Weight_g |
|-------------------|------------------|-----------|----------|
| Gentoo penguin | 1991/6/13 | 105 | 5158 |
| Chinstrap penguin | 1991/3/27 | 54 | 5285 |
| Little penguin | 1990/9/10 | 42 | 774 |
| Little penguin | 1991/6/13 | ? | 877 |
| Chinstrap penguin | 1990/9/4 | ? | 5694 |
| Chinstrap penguin | 1991/3/22 | 54 | 3153 |
| Chinstrap penguin | 1991/6/19 | 66 | 5308 |
| Galapagos penguin | 1990/9/12 | ? | 728 |
| Little penguin | 1990/9/11 | 38 | 956 |
| Gentoo penguin | 1990/12/22 | 63 | 6919 |
| Gentoo penguin | 1991/3/5 | ? | 6080 |
| Gentoo penguin | 1991/6/23 | 71 | 6432 |
| Gentoo penguin | 1991/6/19 | 112 | 6125 |
| Galapagos penguin | 1991/6/24 | 45 | 3027 |
| Little penguin | 1990/9/7 | 41 | 862 |
| Galapagos penguin | 1991/3/23 | 48 | 2623 |
| Little penguin | 1991/3/11 | 44 | 710 |
| Galapagos penguin | 1990/9/24 | 48 | 1914 |
| Gentoo penguin | 1990/12/6 | 100 | 8635 |

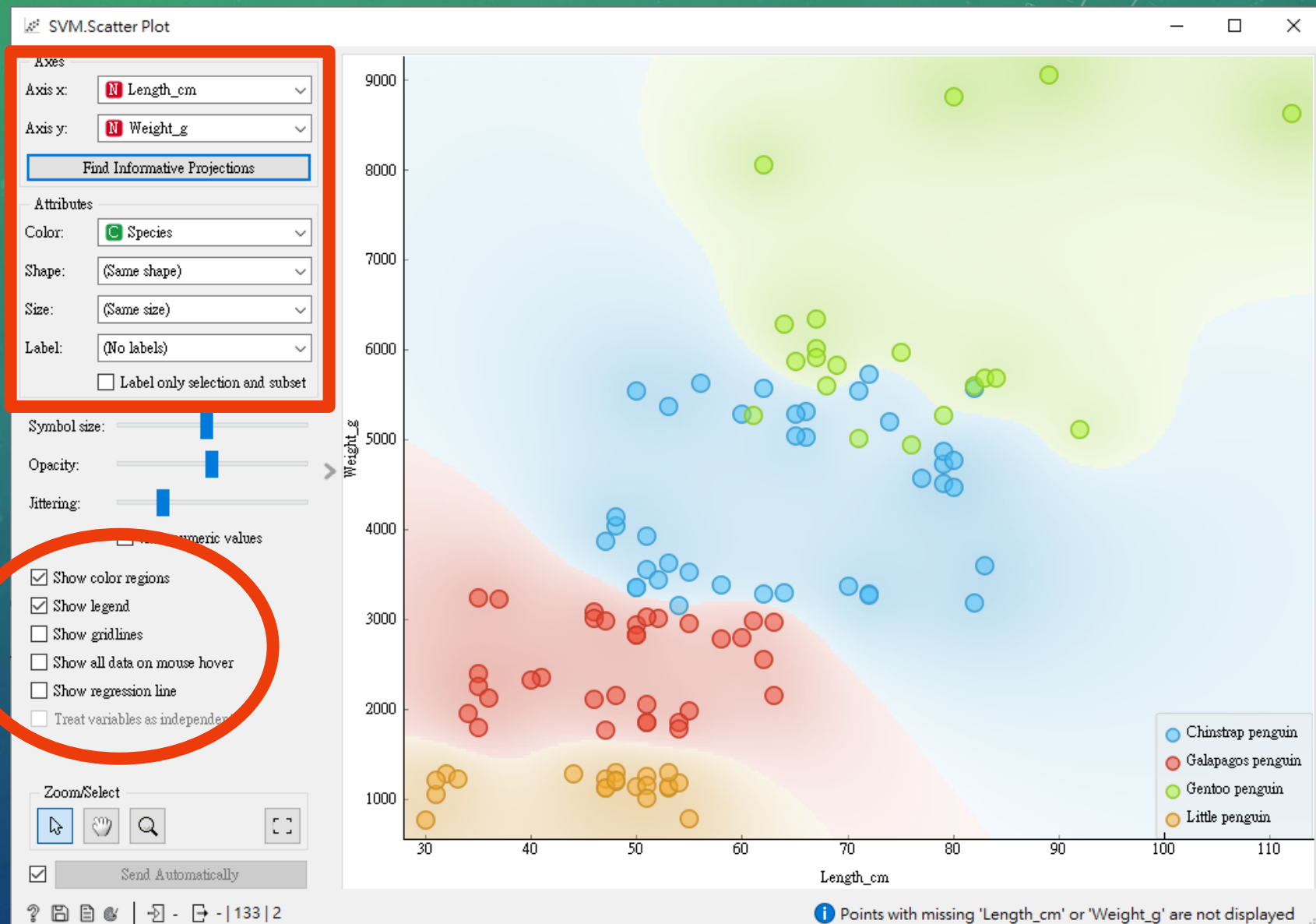
| Model | AUC | CA | F1 | Precision | Recall |
|-------|-------|-------|-------|-----------|--------|
| SVM | 0.990 | 0.932 | 0.932 | 0.932 | 0.932 |

圖形檢視

連點”Scatter Plot”可
查看調整後的模型分
布

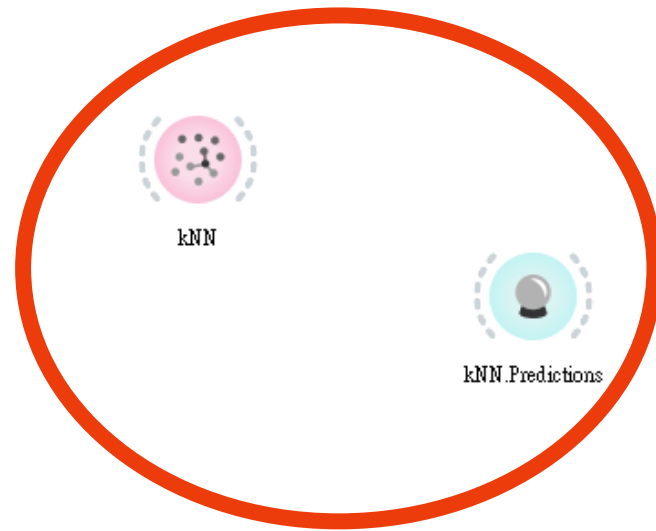
調整Axis欄位可設定
顯示的x,y座標項目

點選”Show color regions”
可察看SVM計算後的
種類分佈



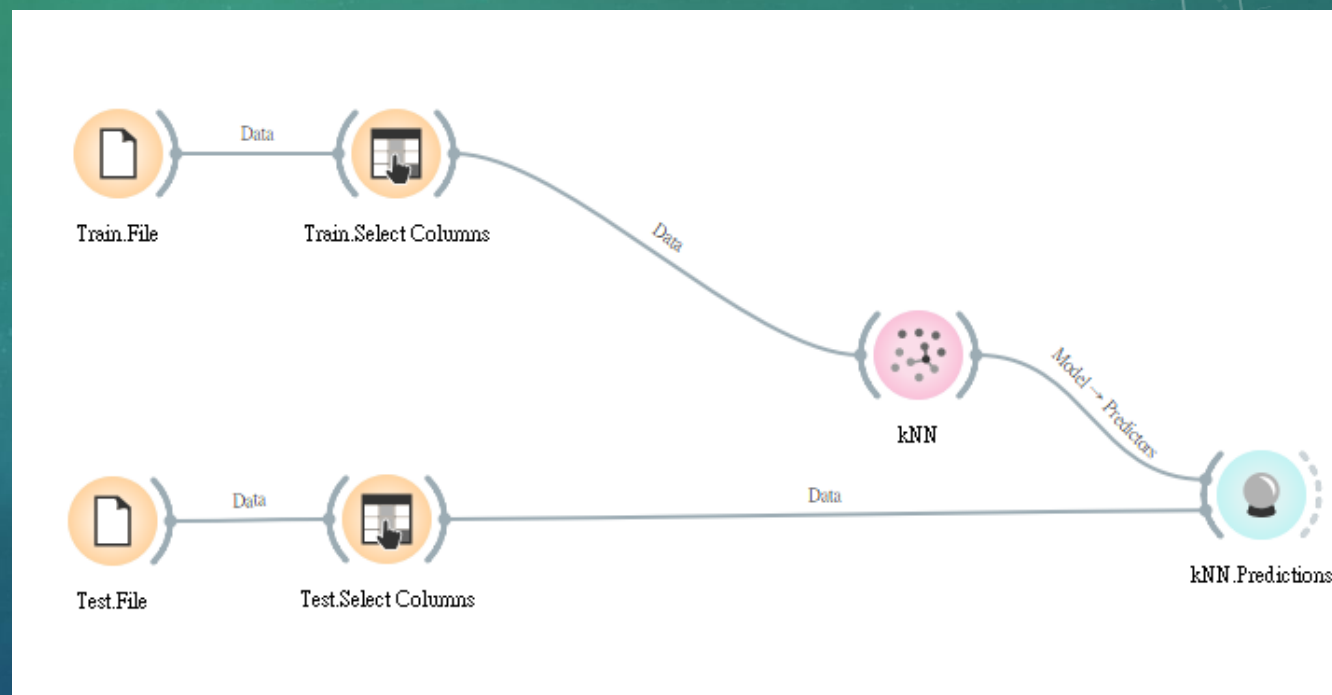
建立KNN

至左側抓取“kNN”、
“Predictions”模組



連結KNN

將訓練資料庫連結到KNN
將測試資料庫連結到預測



檢視KNN

連點“ Predictions”即可察看KNN預測結果

kNN.Predictions

Show probabilities for

- Chinstrap penguin
- Galapagos penguin
- Gentoo penguin
- Little penguin

| | kNN | Species | Measurement Date | Length |
|----|---|------------------|------------------|--------|
| 1 | 0.20 : 0.00 : 0.80 : 0.00 → Gentoo penguin | Gentoo penguin | 1991/6/13 | 105 |
| 2 | 0.80 : 0.00 : 0.20 : 0.00 → Chinstrap penguin | Chinstrap pen... | 1991/3/27 | 54 |
| 3 | 0.00 : 0.00 : 0.00 : 1.00 → Little penguin | Little penguin | 1990/9/10 | 42 |
| 4 | 0.00 : 0.20 : 0.00 : 0.80 → Little penguin | Little penguin | 1991/6/13 | ? |
| 5 | 0.60 : 0.00 : 0.40 : 0.00 → Chinstrap penguin | Chinstrap pen... | 1990/9/4 | ? |
| 6 | 0.40 : 0.60 : 0.00 : 0.00 → Galapagos peng... | Chinstrap pen... | 1991/3/22 | 54 |
| 7 | 1.00 : 0.00 : 0.00 : 0.00 → Chinstrap penguin | Chinstrap pen... | 1991/6/19 | 66 |
| 8 | 0.00 : 0.20 : 0.00 : 0.80 → Little penguin | Galapagos pe... | 1990/9/12 | ? |
| 9 | 0.00 : 0.00 : 0.00 : 1.00 → Little penguin | Little penguin | 1990/9/11 | 38 |
| 10 | 0.00 : 0.00 : 1.00 : 0.00 → Gentoo penguin | Gentoo penguin | 1990/12/22 | 63 |
| 11 | 0.00 : 0.00 : 1.00 : 0.00 → Gentoo penguin | Gentoo penguin | 1991/3/5 | ? |
| 12 | 0.00 : 0.00 : 1.00 : 0.00 → Gentoo penguin | Gentoo penguin | 1991/6/23 | 71 |
| 13 | 0.00 : 0.00 : 1.00 : 0.00 → Gentoo penguin | Gentoo penguin | 1991/6/19 | 112 |
| 14 | 0.00 : 1.00 : 0.00 : 0.00 → Galapagos peng... | Galapagos pe... | 1991/6/24 | 45 |
| 15 | 0.00 : 0.20 : 0.00 : 0.80 → Little penguin | Little penguin | 1990/9/7 | 41 |
| 16 | 0.00 : 1.00 : 0.00 : 0.00 → Galapagos peng... | Galapagos pe... | 1991/3/23 | 48 |

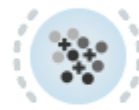
| Model | AUC | CA | F1 | Precision | Recall |
|-------|-------|-------|-------|-----------|--------|
| kNN | 0.992 | 0.881 | 0.876 | 0.886 | 0.881 |

Restore Original Order

59 | 59 | 1x59

建立K-MEANS 相關模組

拉取一個”k-Means”、
以及兩個”Scatter Plot”
模組



k-Means

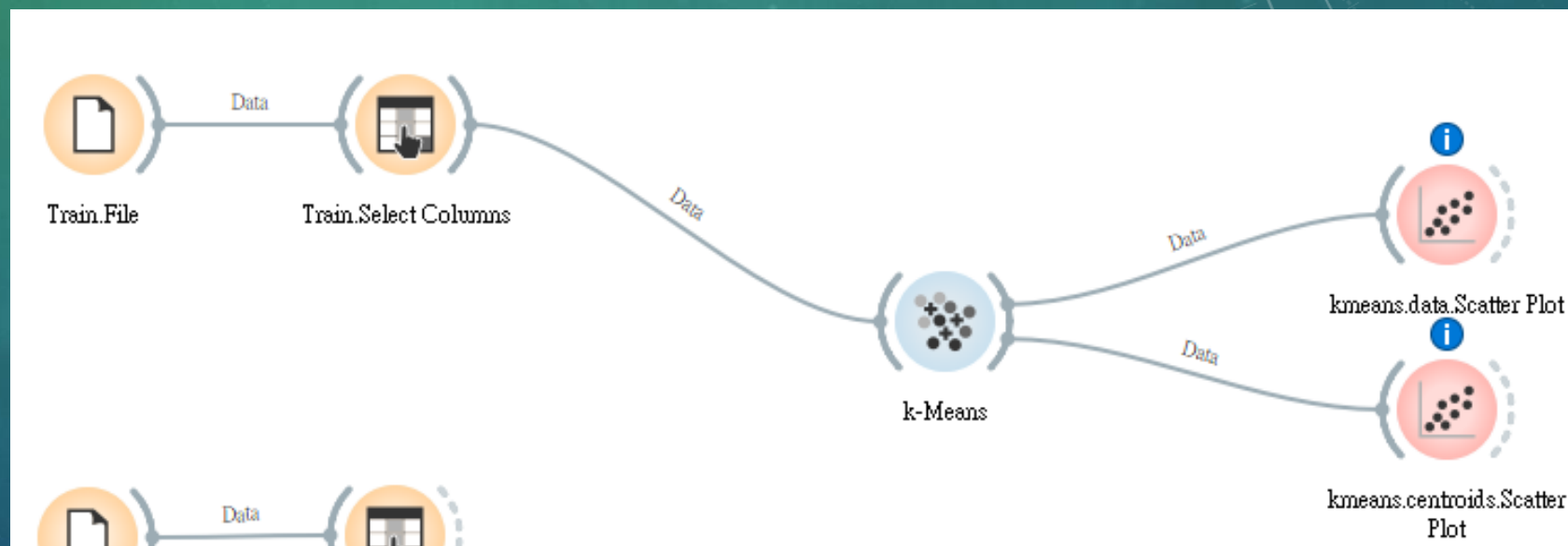


kmeans.data.Scatter Plot



kmeans.centroids.Scatter
Plot

連接K-MEANS 模組

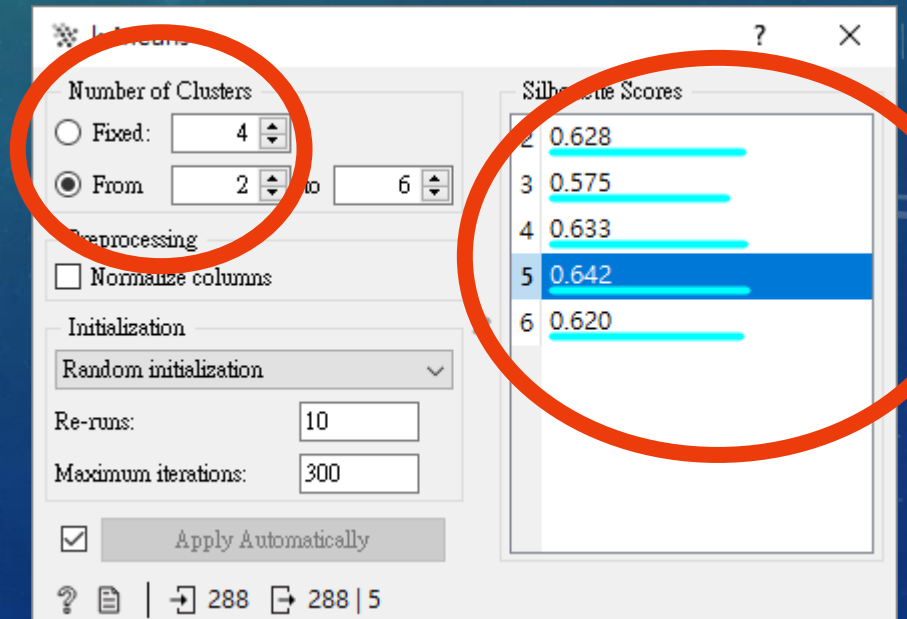
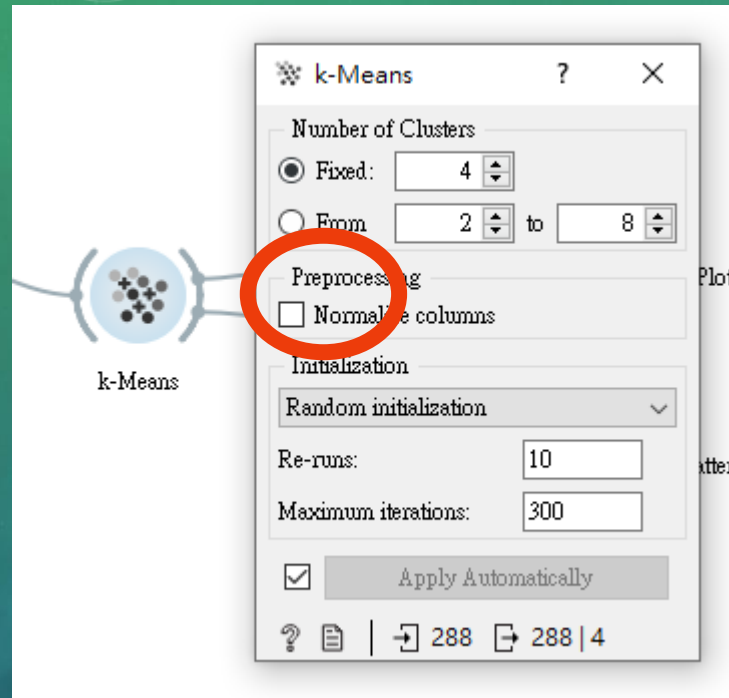


變更K-MEANS 模組設定

已知欲分類4種企鵝
故選擇定群集

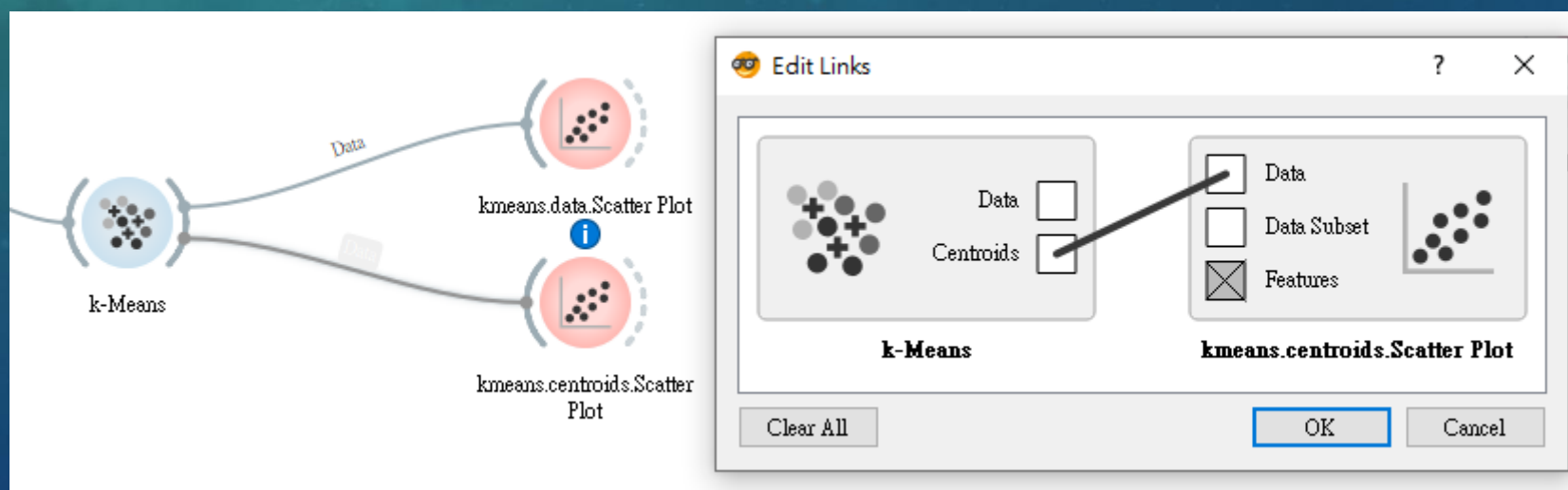
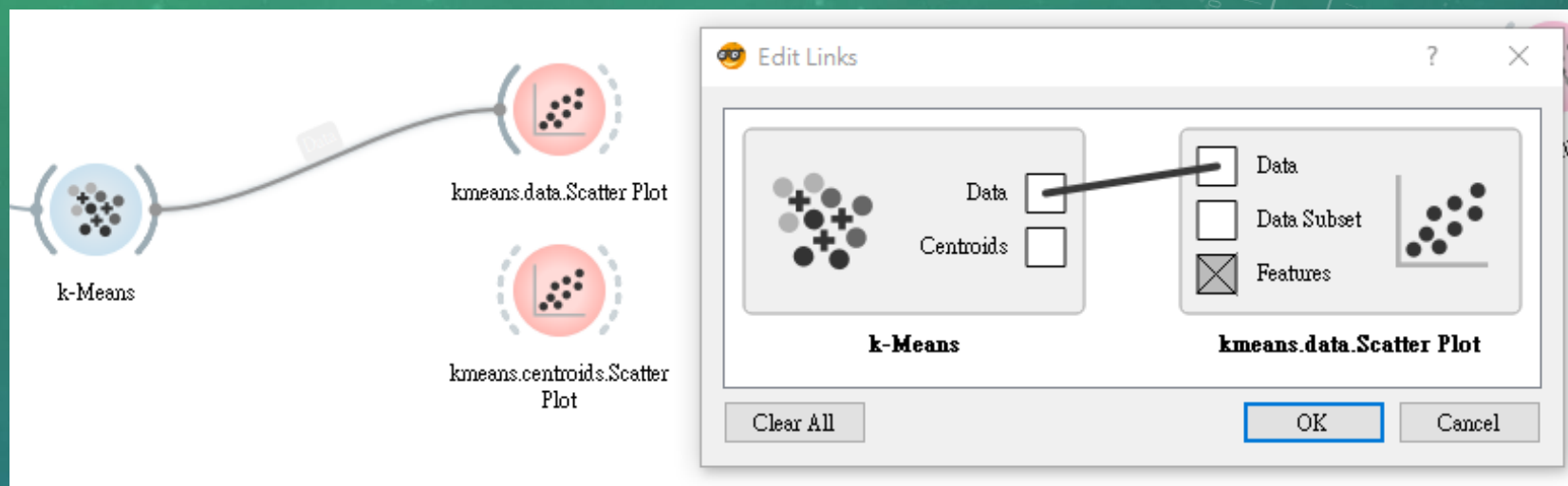
若未知群集數量，則
可選擇範圍，模組會
自動預測最有可能的
群集數量

此外，關閉
“Normalize columns”
不要進行標準化



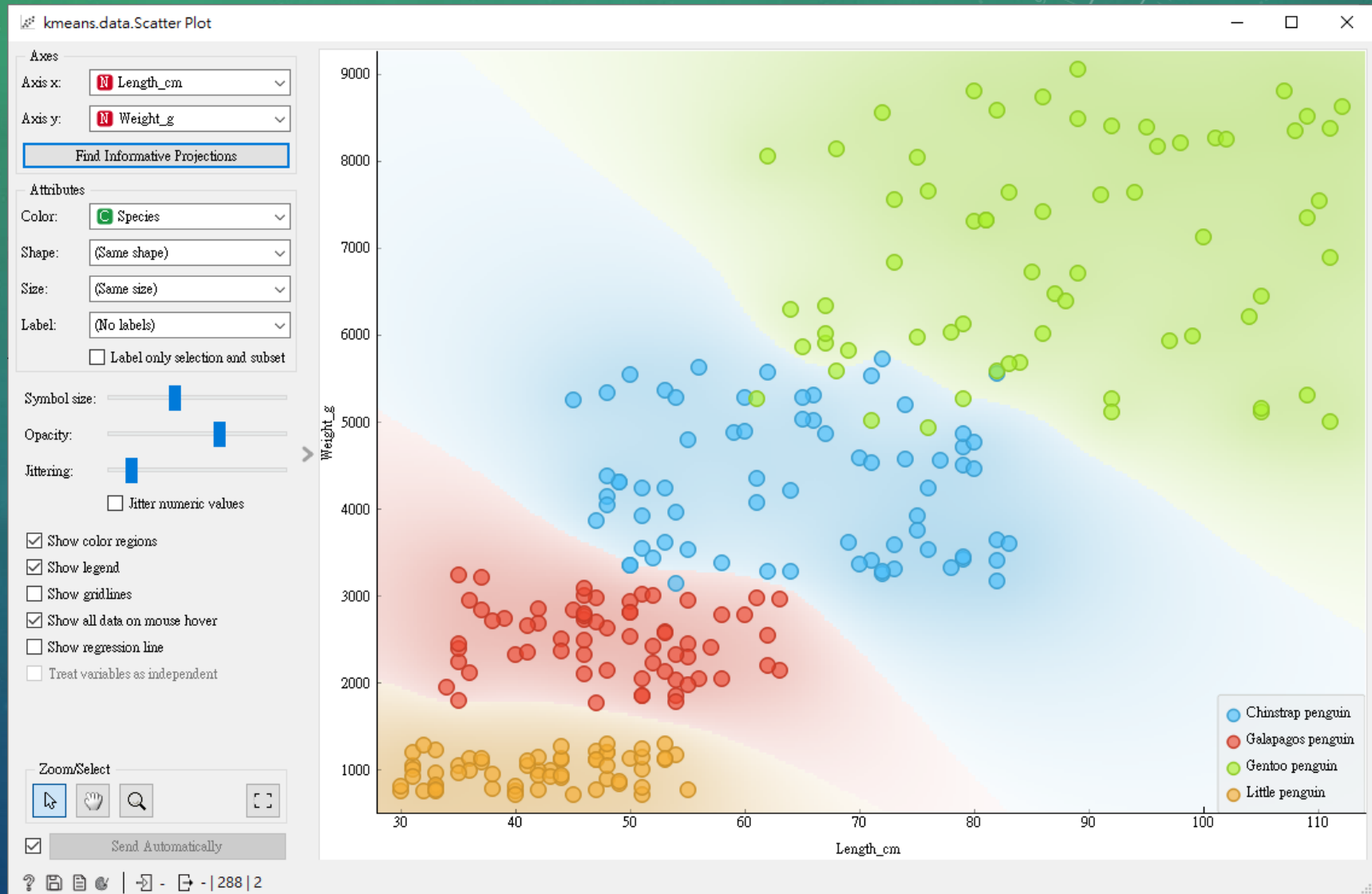
連接K-MEANS 模組

分別設定兩種連接線



檢視K-MEANS 分群結果

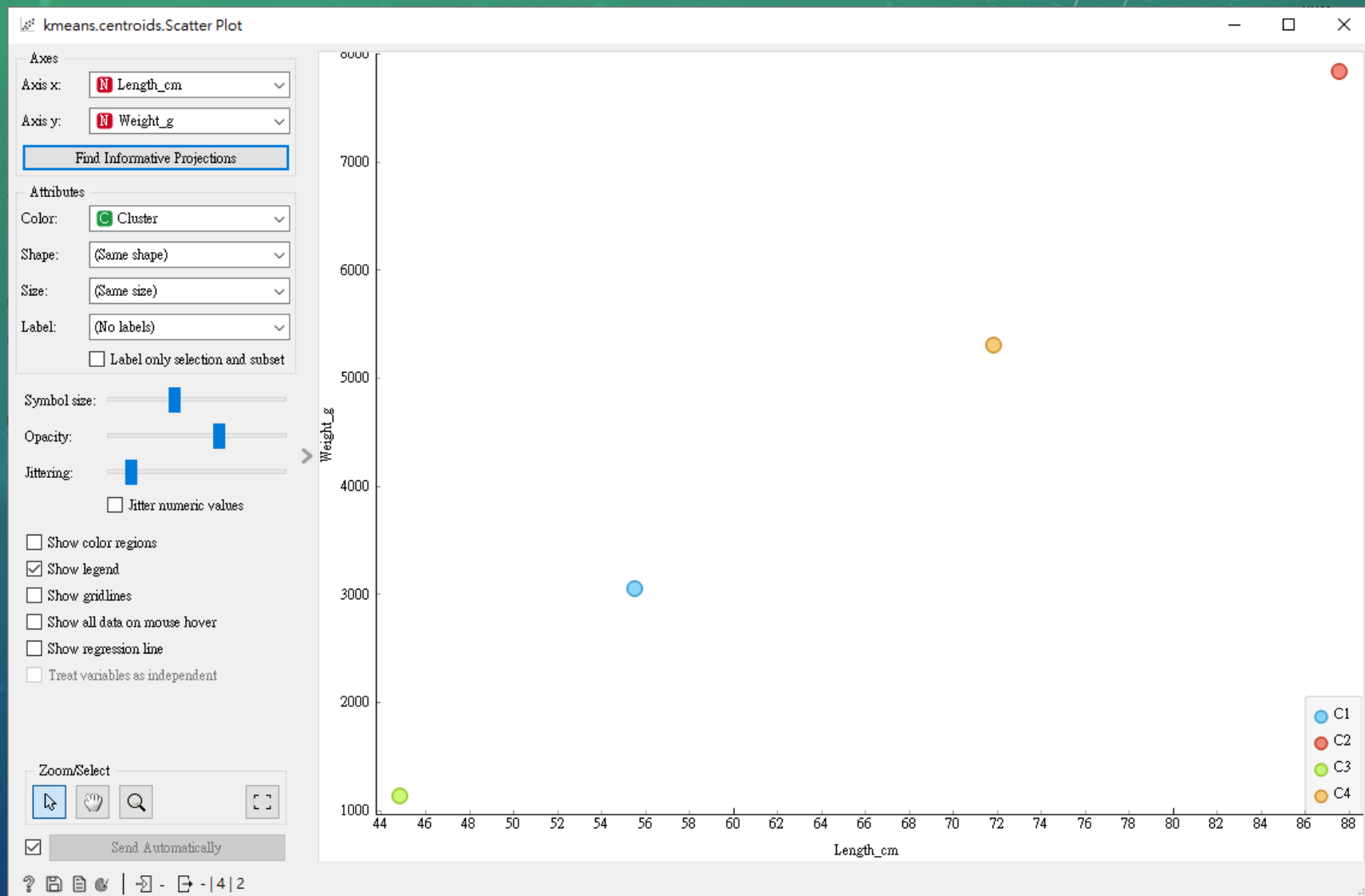
連點輸出資料連接的
Scatter Plot即可檢視
k-Means分群結果



檢視K-MEANS 分群結果

連點輸出中心點
(Centroids)連接的
Scatter Plot即可檢視k-
Means分群分出各群的
中心點座標值

若前面k-Means模組有
設定標準化，則此圖
座標會變成標準化後
的座標



總圖

將三模型串接，可分別點選預測結果與圖形。可以用來檢視與比較各演算法之間計算群集的差異

