Feature Importance Lab

1. Screenshots of code

```
% feature importance based Feature Weight of SVM
% Tested feature: feature weight

clc;
clear all;

% Load workspace of MATLAB to get the file containing positive and
% negative class, and the classification result of SVM model
% See page 4 of PPT Lab
load ('LabFW.mat')

% Performing feature weight (FW); See page 5 of PPT Lab
FW = abs(modelSVM.sv_coef'*modelSVM.SVs)

% Sort feature weight in descending order; See page 5 of PPT Lab
Features = ["Feature A", "Feature B"]
FW = [Features FW]
sortedFW = sortrows(FW',1,'descend')
```

2. Result of feature importance.

```
FW =

    0.0689    0.1380


Features =

  1×2 string array

    "Feature A"    "Feature B"


FW =

  1×4 string array

    "Feature A"    "Feature B"    "0.068862"    "0.13797"


sortedFW =

  4×1 string array

    "Feature B"
    "Feature A"
    "0.13797"
    "0.068862"
```

3. Conclusion of result.

From the result of feature importance, we can find that the feature weight of Feature B is larger than that of Feature A. It indicates that, according to the model's evaluation criteria, Feature B has a greater impact on the model's

predictions or decisions compared to Feature A. This information can be valuable for several reasons. For instance, it can help in understanding which features are driving the model's predictions the most, providing insights into the underlying patterns in the data. Additionally, it can guide feature selection processes, where certain features might be prioritized or excluded based on their importance. In summary, by determining that Feature B holds more weight than Feature A in the ModelSVM analysis, we can determine that Feature B is more important than Feature A in the data for the ModelSVM.