**Lab 11**

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| Name: | 陳柏霖 |
| Student ID: | B09611007 |
| Total Score: |  |

**Note:**

Most of the explanations in this lab is optional. However, giving reasonable explanations to your answer or programs will earn you partial credits when your answer is incorrect.

1. **Feature Extraction and Classification (50 points)**

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| # | Explanation | Score |
| 1 |  |  |
| 2 |  |  |
| 3 |  |  |
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| 5 |  |  |

1. **Discussion (50 points)**

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| # | Answer | Score |
| 1 | Support Vector Machine (SVM) is used, with accuracy 0.61. |  |
| 2 | 1) After attempting to add or remove features, I found that the one with all 6 feature reaches the best result. The reduction of features may lead to the loss of crucial information. In such a case, retaining all features can help the SVM better separate classes.  2) The order of Fourier descriptors needs to be found through experiments. In my case, 20 descriptors are adopted.  3) The removal of backgrounds can effectively avoid background noise, which may influence the performance of classification.  4) dissimilarity, homogeneity, contrast, energy, ASM , correlation |  |
| 3 | 1) According to the confusion matrix, class 2 (Carrot) is likely to misclassified as class 1 (Banana). This may happen due to their similar shapes.    2) Add color feature may be helpful to the task. Perhaps we can first separate RGB channels and generate triple numbers of features to train the model. |  |