


# EE583 Pattern Recognition HW5

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- 1 Question 1
- 2 Question 2
- 3 Question 3
- 4 Question 4

## 5 APPENDIX

The code given in this section is shared @.

### 5.1 Q1

```
1 %%
2 clear; clc;
3 chdir('..')
4 addpath('export_fig')
5 chdir('HW5')
6 %%
7 load fisheriris.mat
8 feats = meas(:,3:4);
9 Y = species;
10 %%
11 tree_model = fitctree(feats,species,'CrossVal','on');
12 view(tree_model.Trained{1},'Mode','graph')
13 Ls = [];
14 for i = 1:10
15     model = tree_model.Trained{1};
16     preds = predict(model,feats);
17     confusion_matrix = confusionmat(species,preds);
18     accuracy = sum(diag(confusion_matrix))/sum(sum(confusion_matrix))
19     ;
20     loss = 1 - accuracy;
21     Ls(end+1) = loss;
22 end
23 mean(Ls)
24 %%
25 tree_model = fitctree(feats,species,'CrossVal','on','MaxNumSplits',7)
26 ;
27 view(tree_model.Trained{1},'Mode','graph')
28 Ls = [];
29 for i = 1:10
30     model = tree_model.Trained{1};
31     preds = predict(model,feats);
32     confusion_matrix = confusionmat(species,preds);
33     accuracy = sum(diag(confusion_matrix))/sum(sum(confusion_matrix))
34     ;
35     loss = 1 - accuracy;
36     Ls(end+1) = loss;
37 end
38 mean(Ls)
39 %%
40 tree_model = fitctree(feats,species,'CrossVal','on','SplitCriterion',
    'deviance');
41 view(tree_model.Trained{1},'Mode','graph')
42 Ls = [];
43 for i = 1:10
44     model = tree_model.Trained{1};
```

```
43     preds = predict(model, feats);
44     confusion_matrix = confusionmat(species, preds);
45     accuracy = sum(diag(confusion_matrix))/sum(sum(confusion_matrix))
46     ;
47     loss = 1 - accuracy;
48     Ls(end+1) = loss;
49 end
50 mean(Ls)
51 %%
52 figHandles = findall(0, 'Type', 'figure');
53 for i = 1:numel(figHandles)
54     export_fig(['Q1_', num2str(i)], '-png', figHandles(i), '-append')
55 end
56
57 hTree=findall(0, 'Tag', 'tree viewer'); close(hTree)
```

**5.2 Q2**

**5.3 Q3**

**5.4 Q4**