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

```
%%
clear;  clc;
chdir('..')
addpath('export_fig')
chdir('HW5')
%%
load fisheriris.mat
feats = meas(:,3:4);
Y = species;
%%
tree_model = fitctree(feats,species,'CrossVal','on');
view(tree_model.Trained{1},'Mode','graph')
Ls = [];
for i = 1:10
    model = tree_model.Trained{1};
    preds = predict(model,feats);
    confusion_matrix = confusionmat(species,preds);
    accuracy = sum(diag(confusion_matrix))/sum(sum(confusion_matrix))
        ;
    loss = 1 - accuracy;
    Ls(end+1) = loss;
end
mean(Ls)

%%
tree_model = fitctree(feats,species,'CrossVal','on','MaxNumSplits',7)
    ;
view(tree_model.Trained{1},'Mode','graph')
Ls = [];
for i = 1:10
    model = tree_model.Trained{1};
    preds = predict(model,feats);
    confusion_matrix = confusionmat(species,preds);
    accuracy = sum(diag(confusion_matrix))/sum(sum(confusion_matrix))
        ;
    loss = 1 - accuracy;
    Ls(end+1) = loss;
end
mean(Ls)
%%
tree_model = fitctree(feats,species,'CrossVal','on','SplitCriterion',
    'deviance');
view(tree_model.Trained{1},'Mode','graph')
Ls = [];
for i = 1:10
    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      loss = 1 - accuracy;
47      Ls(end+1) = loss;
48  end
49  mean(Ls)
50  %%
51  figHandles = findall(0,'Type','figure');
52
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