

Nhat Le
CS 365
Lab C - Decision Trees: Report

I. Decision tree: tennis.txt

```
C:\Users\Nhat\Desktop\Spring 2020 Classes\CS 365\Lab C>python nmle16_LabC_script.py tennis.txt
-->outlook:
    =rain:-->wind:
        =strong:-->no
        =weak:-->yes
    =overcast:-->yes
    =sunny:-->humidity:
        =normal:-->yes
        =high:-->no
Total number of nodes: 8
Total number of example used to train: 14
Training set accuracy: 100.0%
LOOCV accuracy: 78.57142857142857%
```

Training set accuracy: 100%
Number of nodes: 8
Test set accuracy: 78.6 %

II. Decision tree: pets.txt

```
C:\Users\Nhat\Desktop\Spring 2020 Classes\CS 365\Lab C>python nmle16_LabC_script.py pets.txt
-->size:
    =enormous:-->no
    =large:-->no
    =medium:-->color:
        =brown:-->yes
        =gray:-->no
    =small:-->color:
        =brown:-->no
        =orange:-->yes
        =gray:-->earshape:
            =folded:-->yes
            =pointed:-->tail:
                =yes:-->no
                =no:-->yes
    =tiny:-->color:
        =brown:-->no
        =white:-->earshape:-->no
            =pointed:-->tail:-->no
                =yes:-->no
Total number of nodes: 19
Total number of example used to train: 15
Training set accuracy: 86.66666666666667%
LOOCV accuracy: 46.666666666666664%
```

Training set accuracy: 86.7%
Number of nodes: 19
Test set accuracy: 46.7%

III. Decision tree: titanic2.txt

```
C:\Users\Nhat\Desktop\Spring 2020 Classes\CS 365\Lab C>python nmle16_LabC_script.py titanic2.txt
-->sex:
    =female:-->pclass:
        =crew:-->age:-->yes
            =adult:-->yes
        =3rd:-->age:
            =child:-->no
            =adult:-->no
        =2nd:-->age:
            =child:-->yes
            =adult:-->yes
        =1st:-->age:
            =child:-->yes
            =adult:-->yes
    =male:-->pclass:
        =crew:-->age:-->no
            =adult:-->no
        =3rd:-->age:
            =child:-->no
            =adult:-->no
        =2nd:-->age:
            =child:-->yes
            =adult:-->no
        =1st:-->age:
            =child:-->yes
            =adult:-->no
Total number of nodes: 25
Total number of example used to train: 2201
Training set accuracy: 79.05497501135848%
LOOCV accuracy: 79.05497501135848%
```

Training set accuracy: 79.1%

Number of nodes: 25

Test set accuracy: 79.1%