

**CS 214: Artificial Intelligence Lab**  
**Spring 2022-23, IIT Dharwad**  
**Assignment-7**  
**Decision Trees**  
**Artificial Intelligence Lab**

---

|                          |
|--------------------------|
| <b>Problem Statement</b> |
|--------------------------|

Write a program in Python to implement the ID3 decision tree algorithm. You should read in a tab delimited dataset, and output to the screen your decision tree and the training set accuracy in some readable format.

Here are two sample datasets you can try: [tennis.txt](#) and [titanic2.txt](#).

When you run your program, it should take a command-line parameter that contains the name of the file containing the data. For example:

```
python decisiontree.py tennis.txt
```

The first line of the file will contain the name of the fields. The last column is the classification attribute, and will always contain the values **yes** or **no**. All files are tab delimited.

```
outlook = sunny
|  humidity = high: no
|  humidity = normal: yes
outlook = overcast: yes
outlook = rainy
|  windy = TRUE: no
|  windy = FALSE: yes
```

You don't need to make your tree output look exactly like above: feel free to print out something similarly readable if you think it is easier to code.

You may find Python dictionaries especially useful here, as they will give you a quick and easy way to help manage counting the number of times you see a particular attribute

**NOTE:**

- Write your code in file and name it with your\_roll\_number.py.
- Test your code and submit it on moodle.
- Due date for the Assignment is *26<sup>th</sup> March 2023 (11:59PM)*
- Penalty for late submission is *10%* of secured marks.
- We will run a plagiarism check for all the submissions, if found copied *100%* penalty will be applied.
- Viva and demonstration of your submitted code is mandatory and we will share the time slots and date for the same.