CS 580: Introduction to Artificial Intelligence
Project 3: Decision Tree Classifier for Wines
Due: Sun, Apr 30 at 11:59 pm ET

INSTRUCTIONS

- This Project is considered individual effort and the honor code applies when reviewing the implementation.
- Submit your solution as `P3_<username>.py`, and your report `P3_<username>.pdf`, where `<username>` is your Mason account.

NOTES:

- This project has <u>two extra days as a late submission</u>, i.e., the submission link will be open until Tuesday, May 2 at 11:59 ET.
- **It is not a wise decision to wait until the last minute to submit your project**, this action may cause you not to submit your work or submit a wrong file.
- Once the submission link is closed, we do not accept resubmissions or email submissions, so it is the responsibility of the student to verify that the files are the correct ones and not corrupted.
- Multiple submissions are allowed, and the last attempt is graded.

EXTRA CREDIT

Category	Score
The last attempt was at most on original due: April 30, 11:59 pm ET	+5 points
The classifier is at least 90% accurate with the .cvs used for testing*	+5 points

*This data set is not provided, and it will be used only when grading your project.

PENALTIES

Category	Score
Wrong file name `.py`	-3 points
Wrong file name `.pdf`	-3 points
Wrong format (it's not a `pdf` file)	-4 points

CS580: Introduction to Artificial Intelligence
Spring 2023, George Mason University
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Introduction

A **classifier** in **machine learning** is an algorithm that automatically orders or categorizes data into one or more of a set of classes.

There are **supervised** and **unsupervised** classifiers. **Supervised** classifiers are fed training datasets, from which they learn to classify data according to predetermined categories. Unsupervised machine learning classifiers are fed only unlabeled datasets, which they classify according to pattern recognition or structures and anomalies in the data.

Implementation

In this project you will implement in Python a decision tree classifier for wines. The data set for the training (and the one to be used for extra credit) consists of 3 different types of wines. The data set for training can be download from Blackboard.

Access the following link to watch the video that explains the flower classifier code to make the necessary changes on it for this project:

    https://www.youtube.com/watch?v=sgQAhG5Q7iY

Deliverables

Submit two files: the **code** `P3_<username>.py` and a **report** `P3_<username>.pdf`.

After your implementation, run the classifier using the data set for training. It is expected that the classifier is at least 90% accurate.

Generate a document written (Latex or Word) using the IEEE article template for conferences and its specifications.

Download the template: Conferences\Original Research\Latex or Word

    https://template-selector.ieee.org/secure/templateSelector/publicationType

In case you want to write your report online, overleaf could be an option:

    https://www.overleaf.com/login

The report must contain at least the next sections:

- Abstract
- Introduction
- Background
- Proposed Approach
- Experimental Results
- Conclusions
- References (at least two, including the textbook)

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