Assignment 1

Due Sunday by 11:59pm **Points** 100 **Submitting** a text entry box or a file upload
Available Apr 5 at 12am - Apr 16 at 11:59pm 12 days

Low-cost Sensor

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Your task for this assignment: Design a simple, low-cost sensor that can distinguish between red wine and white wine.

Your sensor must correctly distinguish between red and white wine for at least 95% of the samples in a set of 6497 test samples of red and white wine.

Your technology is capable of sensing the following wine attributes:

- Fixed acidity - Free sulphur dioxide
- Volatile acidity - Total sulphur dioxide
- Citric acid - Sulphates
- Residual sugar - pH
- Chlorides - Alcohol
- Density

Tasks

1. Read WineQuality.pdf.
2. Use the RedWhiteWine.csv/arff file that is provided.
   Note: If needed, remove the quality attribute, which you will not need for this assignment.
3. Build an experiment using Decision Trees.
   1. What is the percentage of correct classification results (using all attributes)?
   2. What is the percentage of correct classification results (using a subset of the attributes)?
   3. What is the AUC of your model?
   4. Visualize your decision tree
4. What is the best AUC that you can achieve?
5. Which are the the minimum number of attributes? Why?

Submission

Submit a 1-pager highlight your solution, and answering the 5 questions above

1. **You can use either R or Python.**
   Ideally, share the link for your online notebooks, so we can reproduce your results.
2. Note your findings and any insights when working on this assignment

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