

CHAPTER 1: CLASSIFICATION

LORE

In the land of *EM* wild magic has spread without checks or bounds. The magic acts strangely and without obvious reason. Swords are turned to salmon, bread is changed to bacon, and oddly colored, strangely smelling mushrooms pop up everywhere.

The council of consulate counselors (CCC) has searched the land for those with the skills to help fight back against this odd magic. They have almost given up hope when the powerful Knights of *ACME* arrive bringing aid.

"Behold! When knights arrive with weapons splayed. To tame the magic, of the day. Beware the caps, gills, and stalks. Poison hides, that unknown fox."

WELCOME!

BRAVE KNIGHTS

The kingdom is in chaos and it's up to you to save the day! The CCC has asked you to help determine which of these strange mushrooms can be consumed, and which must be avoided.

With your mathemagical background, you realize this is a simple classification problem. You send word to the CCC requesting that the villagers gather data about the different kinds of mushrooms.

This data is transcribed into the great *LS* codex under the *Content* tab.

HELPFUL SPELLS

SKLEARN

Your spell book section on classification

```
from sklearn.model_selection import
    train_test_split
```

```
from sklearn.metrics import
    classification_report
```

```
from sklearn.ensemble import
    RandomForestClassifier
```

```
import pandas as pd
import numpy as np
```

STR	DEX	CON	INT	WIS	CHA
8 (-1)	10 (+0)	10 (+0)	14 (+2)	14 (+2)	12 (+1)

Senses —

Languages Python

Challenge 100% accuracy

ACTIONS

Train Test Split. Split the data that the villagers have provided into a training set and a testing set. The villagers are all extremely skilled in data collection, so the data provided for you is completely error free, no enchantments are required for further cleaning.

Random Forest Classifier. This powerful spell has been passed down throughout the generations, it's origins and uses can be found on the World Wide Web of magical cantrips (wikipedia). Your training has shown that this trusty incantation has enough capacity to handle the wild mushroom magic.

Classification Report. Deliver this report, along with your methods and reasoning to the CCC in a single page write up.

INCANTATION PREPARATION

JUPYTER NOTEBOOK

4th-level discernment

Casting Time: < 5 hours

Range: SSH distance

Components: Python3 and dependencies

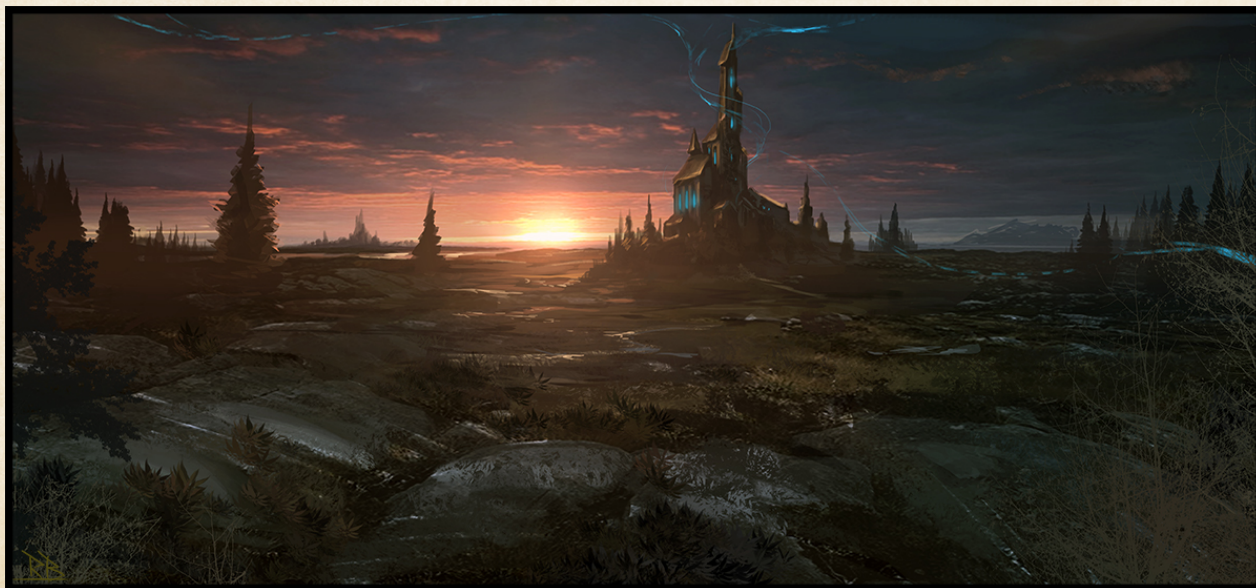
Duration: Until dispelled

Working as a team, much of the preparation for this classification work has been done for you. It also can be found under the *Content* tab on the great *LS* codex.

Your job will be to split the data, and determine which mushroom features are

most important to classification. When this knowledge is found, you must cast the classification and report how well it does on the test mushrooms.

Your wise instructors at Brighamiya Youngerton Universal write about Knights who were able to achieve 100% accuracy on mushroom classification wielding these very spells. Can you fill those shoes?



POST SPELL

After the classification spell fades, and the villagers cheer your success. You hear a voice carried on the winds of algebraic energy.

"You silly knights think your prebuilt classifications are a match for my untamed wild power?! I, *Ecolenor*, Destroyer of Logic cannot be contained by your axioms and definitions! Beware, my return is imminent, and nothing you do can stop me!"