Mushroom Toxicity

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Mushrooms

According to Wikipedia

A **mushroom** or **toadstool** is the fleshy, spore-bearing fruiting body of a fungus, typically produced above ground, on soil, or on its food source.

There are many mushrooms that are edible but there are also many that are poisonous.

Edible or Poisonous?

We explored this question by utilizing 2 different datasets

- Data gathered from the article **Reviewing the world's edible mushroom species: A new evidence‐based classification system at https://onlinelibrary.wiley.com/doi/full/10.1111/1541-4337.12708**

  Used to generate charts showing toxicity utilizing the scientific name

- Kaggle's **Mushroom Classification** Dataset https://www.kaggle.com/uciml/mushroom-classification

  Used to generate 3 machine learning models to predict mushroom toxicity

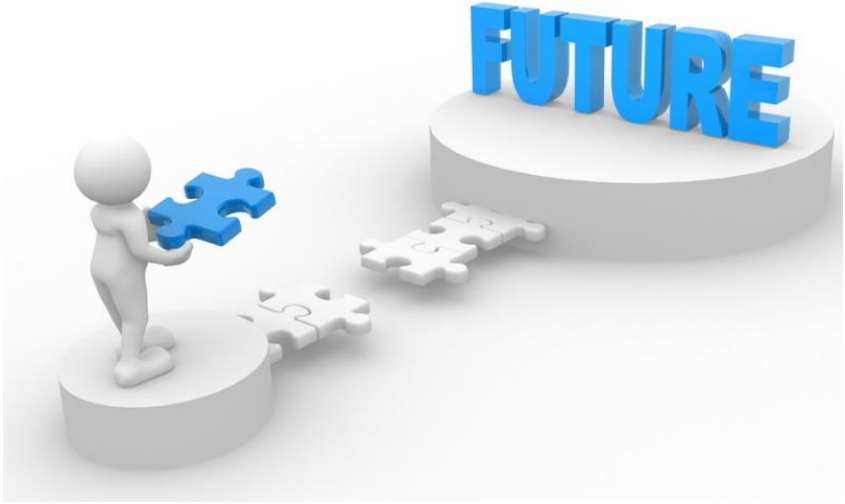
Tools Utilized

- Jupyter Notebook
- Python Pandas
- Python Matplotlib
- Python Seaborn
- Python Scikit-Learn
- HTML/CSS/Bootstrap
- Javascript D3.js
- Github Pages

Difficulties Encountered

- Large Number of mushrooms that exist
- Common Name vs Scientific Name
- No scientific names or images included with the Kaggle data
- Complexity of finding pictures and matching to scientific name
- Varies websites with conflicting scientific names and information for what appears to be the same mushroom
- Random Forest and K-Nearest Neighbor Machine Learning Models got identical scores which could possibly indicate a problem.

Future Enhancements



- We would like to add a feature that collects images of mushrooms utilizing the scientific name. We would also collect data that compares the scientific name as well as the common name and statistics about each mushroom. The images would then be utilized to train machine learning models to identify the scientific name of a mushroom image presented before displaying information about that mushroom including the common name and identifying whether to image of the mushroom was of one that is edible or not.
- We would like to future investigate the Random Forest and K-Nearest Neighbor Models to try to determine the cause of identical scores.
- We would like to enhance the sunburst chart by adding a feature where if you click on a genera or species, a popover would come on screen providing a link to MycoBank or any other hub providing more information on the mushroom.