

10 May 2024

Description of Project:

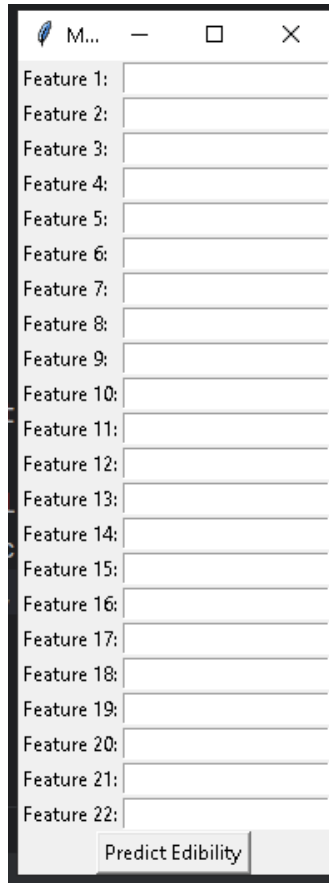
Some data analysis and visualization was done on the [UCIML mushroom dataset](#). Its focus is on whether a mushroom is more likely to be poisonous or not depending on the presence or lack of certain physical features (e.g. brown and bell-shaped cap versus a red and conical cap).

The applet from the .py file uses the analysis's findings to predict mushroom edibility based on input composed of categorical values exactly following the dataset's convention.

Before running the program, some packages need to be installed through the Python console, so I used the following commands:

```
import pip
pip.main(['install', 'ucimlrepo'])
pip.main(['install', 'scikit-learn'])
pip.main(['install', 'pandas'])
pip.main(['install', 'seaborn'])
pip.main(['install', 'matplotlib'])
pip.main(['install', 'certifi'])
```

Run the program, and the user interface will pop up (it may take up a minute to appear):



The image shows a software window titled "M..." with a standard Windows-style title bar (minimize, maximize, close buttons). Inside the window, there is a vertical list of 22 labels, each followed by a text input field. The labels are "Feature 1:", "Feature 2:", "Feature 3:", "Feature 4:", "Feature 5:", "Feature 6:", "Feature 7:", "Feature 8:", "Feature 9:", "Feature 10:", "Feature 11:", "Feature 12:", "Feature 13:", "Feature 14:", "Feature 15:", "Feature 16:", "Feature 17:", "Feature 18:", "Feature 19:", "Feature 20:", "Feature 21:", and "Feature 22:". At the bottom of the window, there is a button labeled "Predict Edibility".

Following the variables from the UCIML mushroom dataset, for each field: enter the appropriate character among the 22 ordered-characters

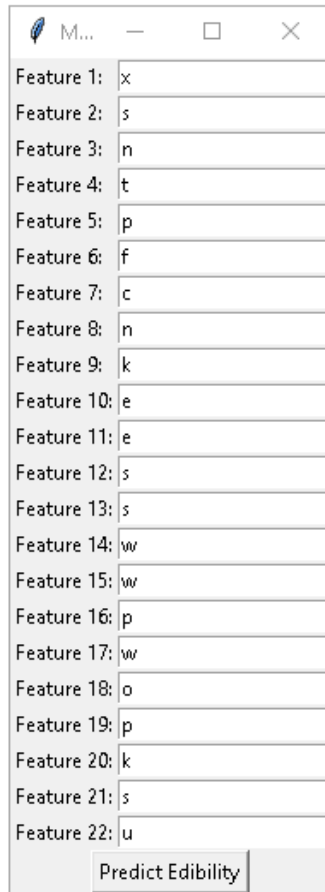
Additional Variable Information

1. cap-shape:	bell=b,conical=c,convex=x,flat=f, knobbed=k,sunken=s
2. cap-surface:	fibrous=f,grooves=g,scaly=y,smooth=s
3. cap-color:	brown=n,buff=b,cinnamon=c,gray=g,green=r, pink=p,purple=u,red=e,white=w,yellow=y
4. bruises?:	bruises=t,no=f
5. odor:	almond=a,anise=l,creosote=c,fishy=y,foul=f, musty=m,none=n,pungent=p,spicy=s
6. gill-attachment:	attached=a,descending=d,free=f,notched=n
7. gill-spacing:	close=c,crowded=w,distant=d
8. gill-size:	broad=b,narrow=n
9. gill-color:	black=k,brown=n,buff=b,chocolate=h,gray=g, green=r,orange=o,pink=p,purple=u,red=e, white=w,yellow=y
10. stalk-shape:	enlarging=e,tapering=t
11. stalk-root:	bulbous=b,club=c,cup=u,equal=e, rhizomorphs=z,rooted=r,missing=?
12. stalk-surface-above-ring:	fibrous=f,scaly=y,silky=k,smooth=s
13. stalk-surface-below-ring:	fibrous=f,scaly=y,silky=k,smooth=s
14. stalk-color-above-ring:	brown=n,buff=b,cinnamon=c,gray=g,orange=o, pink=p,red=e,white=w,yellow=y
15. stalk-color-below-ring:	brown=n,buff=b,cinnamon=c,gray=g,orange=o, pink=p,red=e,white=w,yellow=y
16. veil-type:	partial=p,universal=u
17. veil-color:	brown=n,orange=o,white=w,yellow=y
18. ring-number:	none=n,one=o,two=t
19. ring-type:	cobwebby=c,evanescent=e,flaring=f,large=l, none=n,pendant=p,sheathing=s,zone=z
20. spore-print-color:	black=k,brown=n,buff=b,chocolate=h,green=r, orange=o,purple=u,white=w,yellow=y
21. population:	abundant=a,clustered=c,numerous=n, scattered=s,several=v,solitary=y
22. habitat:	grasses=g,leaves=l,meadows=m,paths=p, urban=u,waste=w,woods=d

For easy running and testing, here are some legal 22-tuples for you to use in the corresponding fields:

1. (f,f,n,f,n,f,c,n,p,e,e,s,s,w,w,p,w,o,p,k,v,u) - edible
2. (x,s,n,t,p,f,c,n,w,e,e,s,s,w,w,p,w,o,p,n,s,g) - poisonous
3. (f,y,y,t,l,f,c,b,n,e,r,s,y,w,w,p,w,o,p,k,y,p) - edible

NOTE: the app user is not supposed to already know the edibility of the mushroom in question, but this is for testing purposes.



Feature 1:	x
Feature 2:	s
Feature 3:	n
Feature 4:	t
Feature 5:	p
Feature 6:	f
Feature 7:	c
Feature 8:	n
Feature 9:	k
Feature 10:	e
Feature 11:	e
Feature 12:	s
Feature 13:	s
Feature 14:	w
Feature 15:	w
Feature 16:	p
Feature 17:	w
Feature 18:	o
Feature 19:	p
Feature 20:	k
Feature 21:	s
Feature 22:	u

Predict Edibility

Then click the “Predict Edibility” button: a popup window will tell the user if the machine-learning model has determined the input as corresponding to a poisonous mushroom or an edible one:

