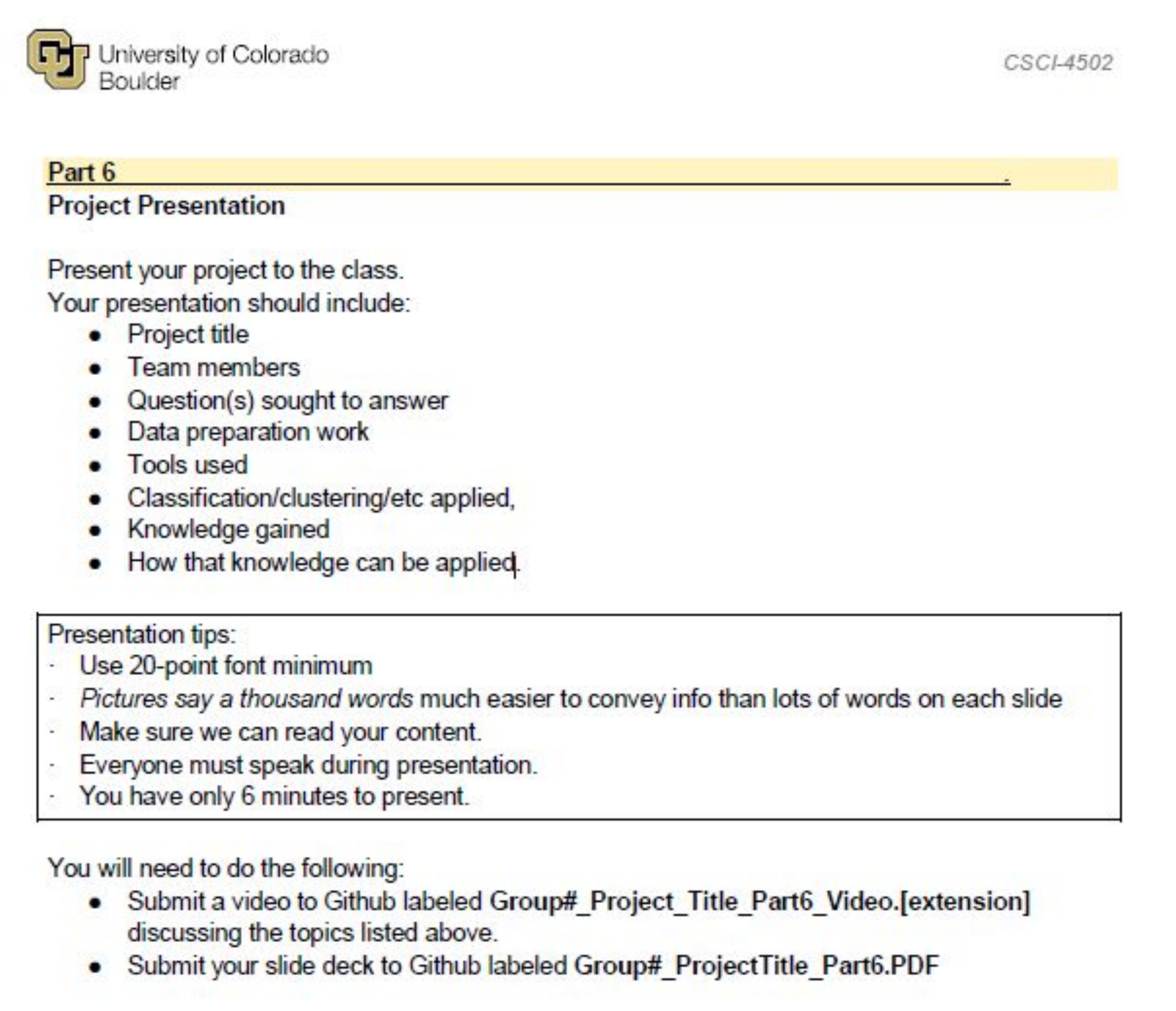


University of Colorado Boulder

CSCI-4502

Part 6

Project Presentation

Present your project to the class.
Your presentation should include:

- Project title
- Team members
- Question(s) sought to answer
- Data preparation work
- Tools used
- Classification/clustering/etc applied,
- Knowledge gained
- How that knowledge can be applied.

Presentation tips:

- Use 20-point font minimum
- *Pictures say a thousand words* much easier to convey info than lots of words on each slide
- Make sure we can read your content.
- Everyone must speak during presentation.
- You have only 6 minutes to present.

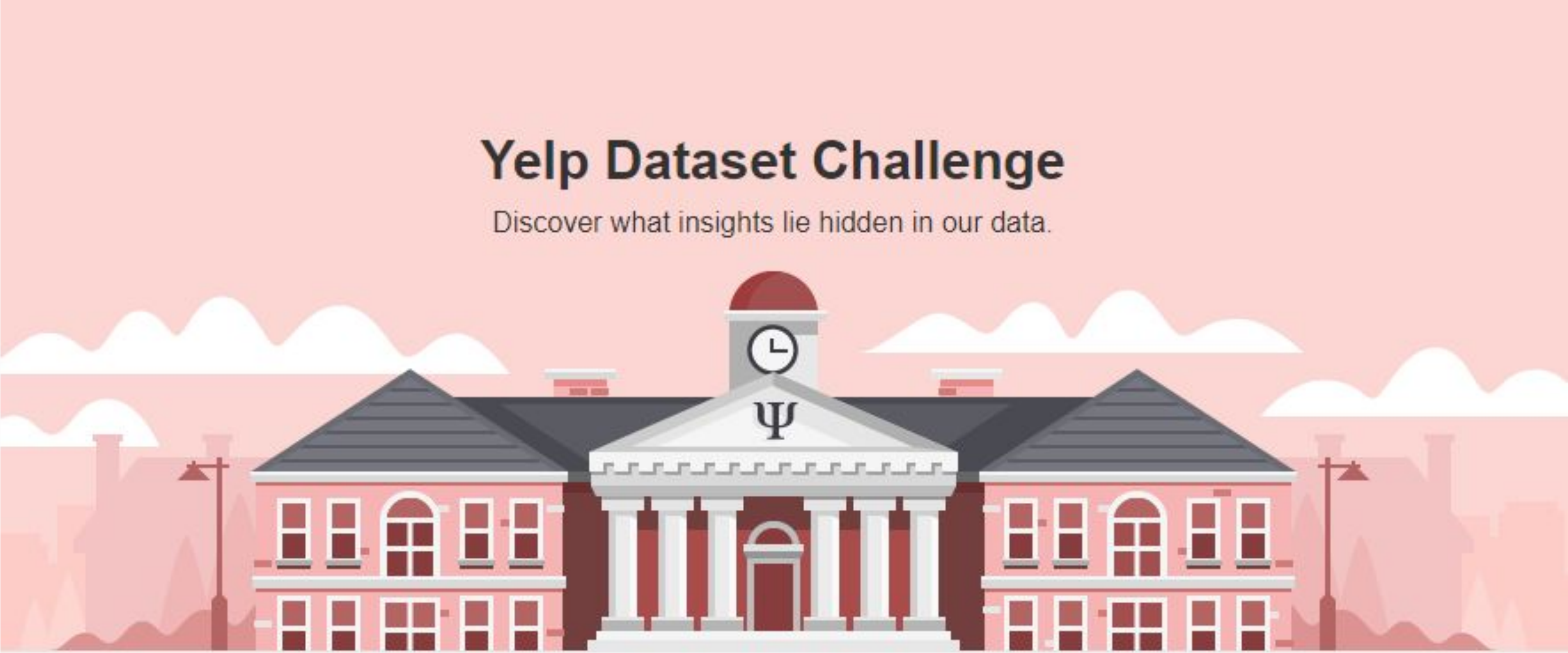
You will need to do the following:

- Submit a video to Github labeled **Group#_Project_Title_Part6_Video.[extension]** discussing the topics listed above.
- Submit your slide deck to Github labeled **Group#_ProjectTitle_Part6.PDF**

Yelp Data Mining

Chris Powell, Jacob Bostick, Donald Boles

What is the Yelp Dataset Challenge?



Question(s) sought to answer

- Where should a person open a business based on these reviews in Yelp?
    - Determine the type, location, name, and reviewers

Tools used

- **Programming Language:** Python
- **Libraries:** pandas, plot.ly, matplotlib, geopandas, shapely, follium, numpy, seaborn, StandardScaler, KMeans, PCA, DecisionTreeClassifier, train_test_split, export_graphvi, Image
- **Repository:** github
- **IDE:** Jupyter Notebook

Datasets

○ Within the Yelp dataset, we plan on using the reviewer, business, checkin, and user json files.

○ The Yelp dataset can be found at https://www.yelp.com/dataset/challenge.

○ Local download on all team members machines.

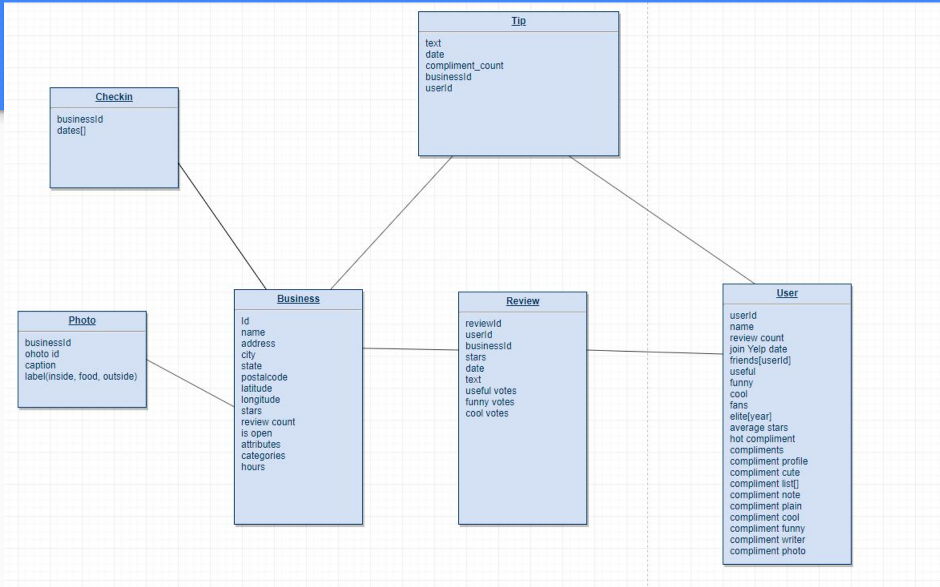
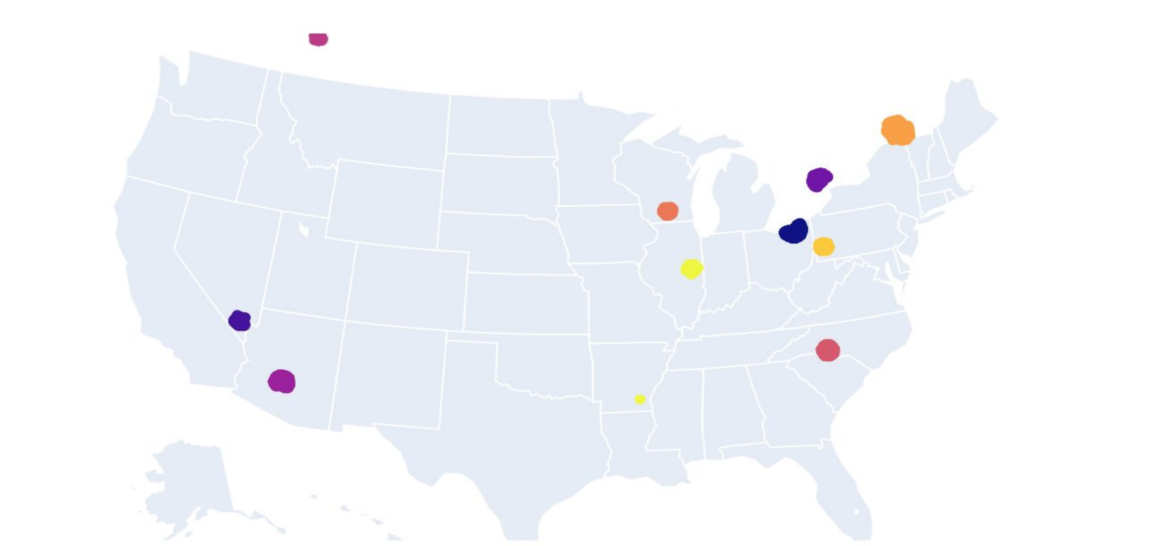


Diagram of json files and attributes

Data preparation work

- Files ranged from .5 gigabyte to 6 gigabytes and contained millions of records and tens of millions of overall data points.
- Merging files using the IDs into pandas dataframes.
- Building a dictionary of all words in business names
- Building a dictionary of all attributes.
- Creating a boolean for the 5 star rated businesses as a column n the dataframe.
- Creating a dataframe with a record for each attribute for the decision tree to learn off of.

K-means Clustering plotly visualization



Choosing a cluster: Nevada?

Open rate of the businesses

- 0.17241500916913532

Average number of reviews

- 35.327955282832555

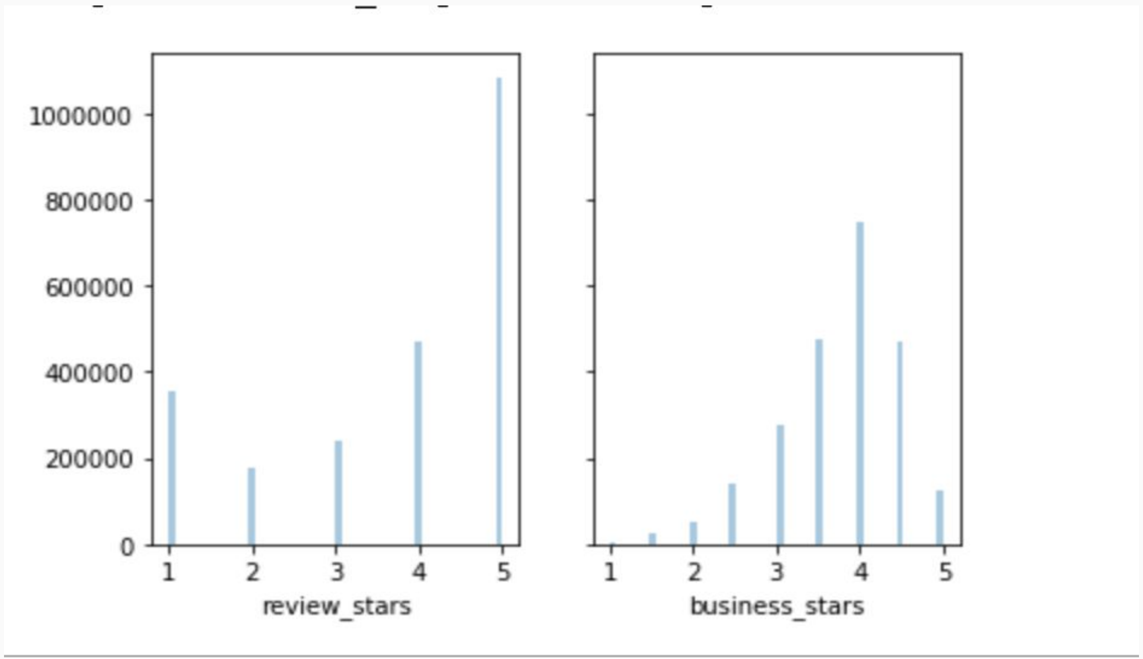
Average rating of businesses

- 3.7071783749471012

Classification/clustering/etc applied

- Naive Bayes classification
  - (used to find the probability of getting 5 stars)
- K-means clustering
  - (used in clumping locations based on geographical region)
- Information Gain using Decision Tree
  - (used to find the highest entropy for all attributes - also used to take a closer look at categories and the business names)

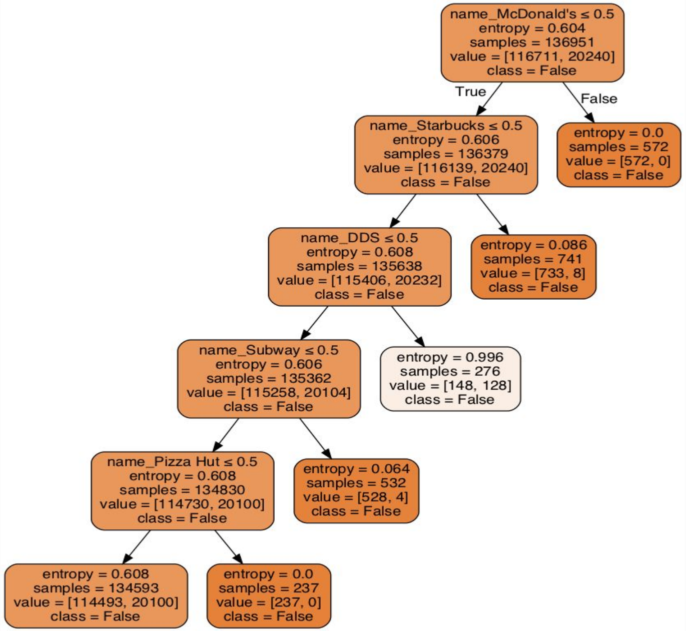
Review Stars vs Business Stars

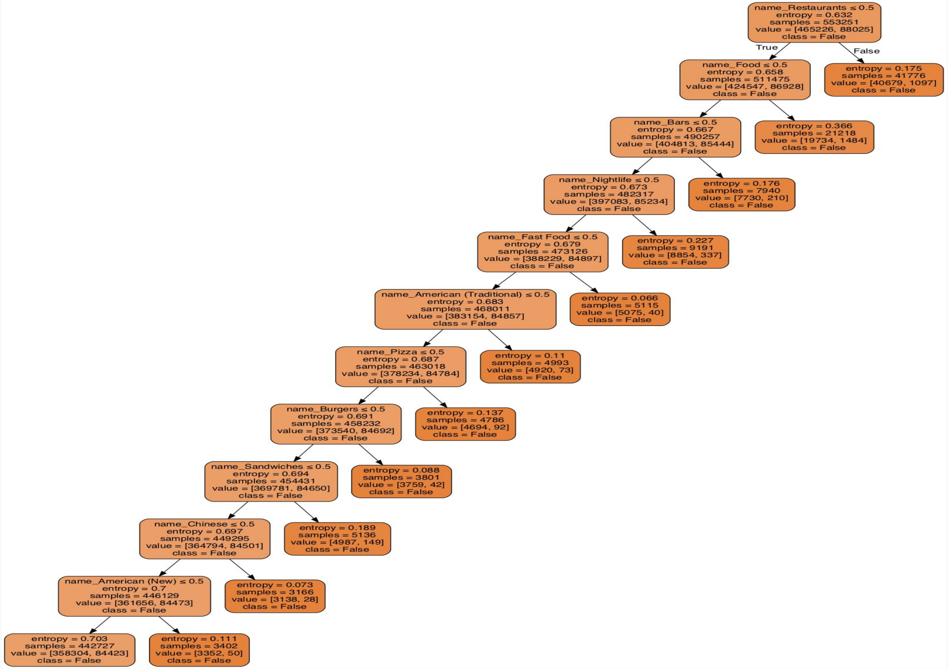


Knowledge gained

- The most likely name of a business with a 5-star rating is ‘DDS’. This is a shorthand for doctor of dentistry.
- Restaurants, Food, and Bars were the top attributes of a business with a 5-star rating.

Information Gain Using Decision Tree





How that knowledge can be applied

- Knowledge of which business markets rate higher
  - Starting a business
- Knowledge of which businesses need help
  - Which businesses to consult to
- Being a dentist you should:
  - Put your name in the business name. ‘Premiere Dentistry with Jacob Bostick DDS’.
  - Sell food at your dentist office.