COG-DUO

Sameer Gadicherla
Rahul R Bharadwaj

Overview

- An app which can intelligently recommend places to explore, based on current (or any other) location.

- Real-time knowledge of customer’s context (current location, preferences, etc.)

- Customer segmentation by analyzing usage patterns

tripadvisor

zomato

Understanding the problems

- Improve an industry’s (or company’s in specific) outreach and quality of service (QoS).

- Limited opportunities to satisfy customers on a person-to-person level.

- Hospitality based businesses like hotels and eateries depend on customer satisfaction.

- Understanding customer becoming a more important field with advancement in ML techniques.

Goals

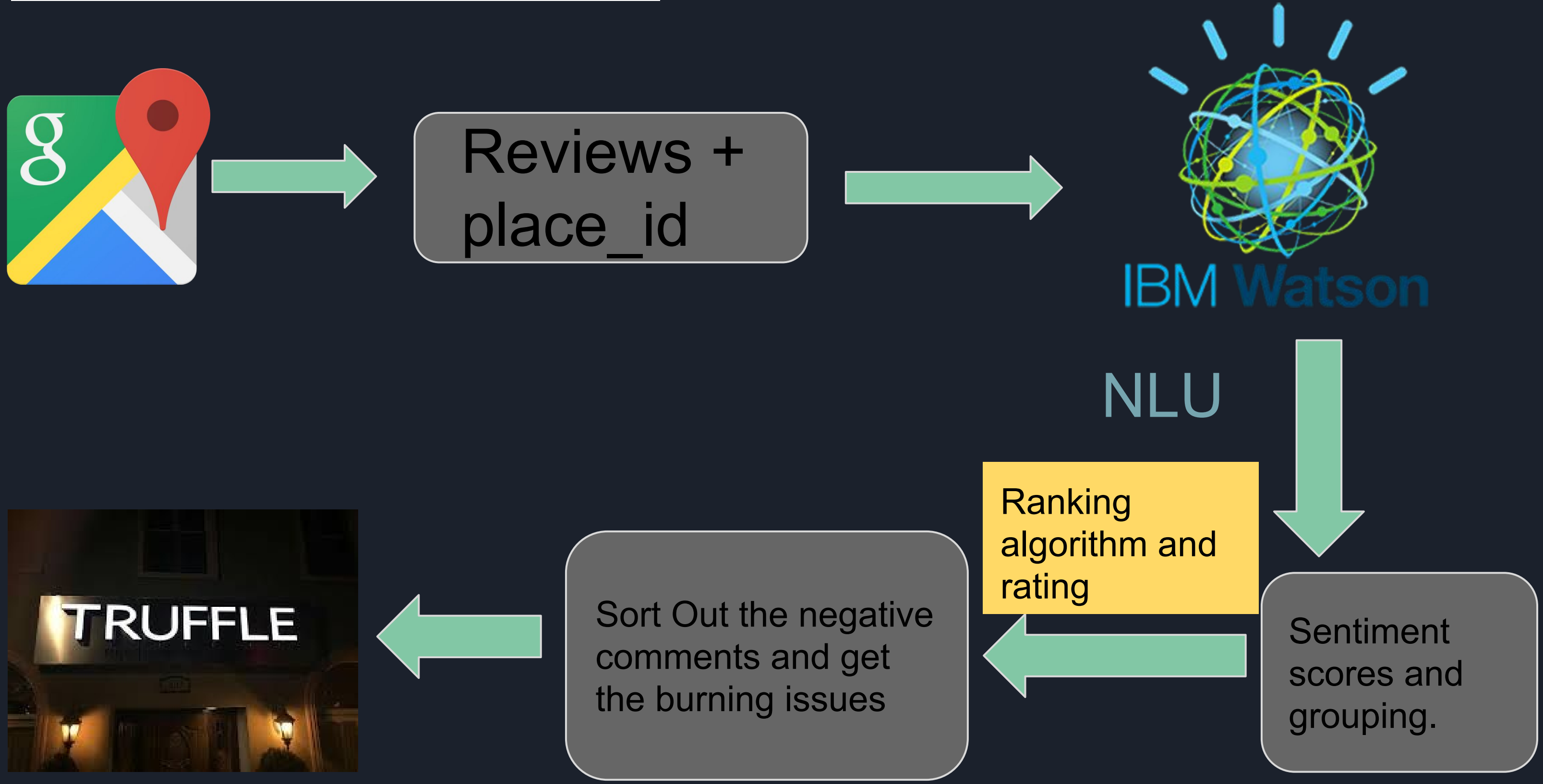
01 Personalized suggestions, offers, and alerts

02 Recommendation engines

03 Predicting customer ROI and lifetime value

04 Predictive inventory planning

Business Model:



Reviews + place_id

NLU

Sentiment scores and grouping.

Ranking algorithm and rating

Sort Out the negative comments and get the burning issues

Tools being used

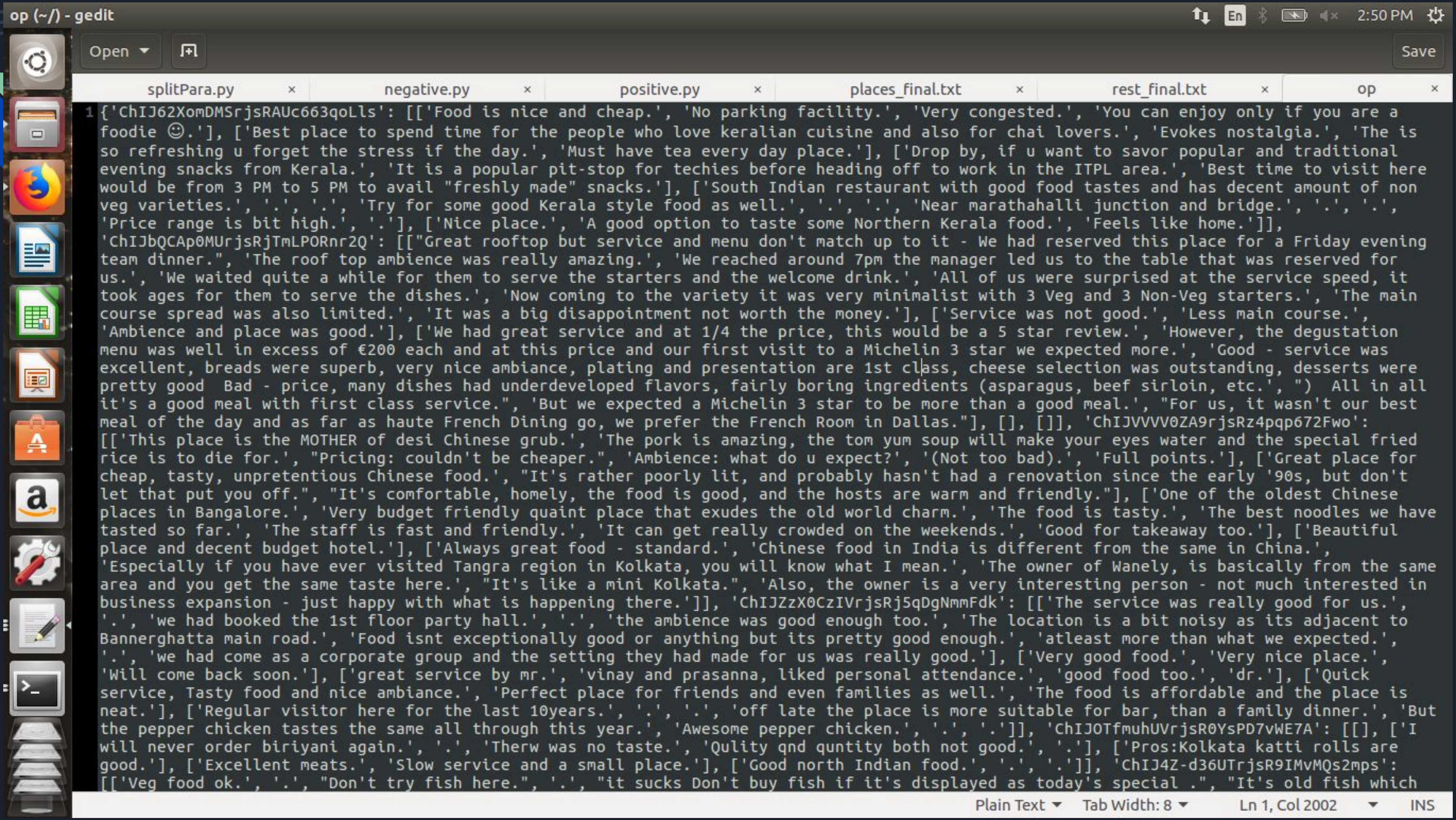
- APIs from IBM Analytics:
  A. Natural Language Classifier(NLC) (to train a model based on the classes and keywords) <u>(future application)</u>
  B. Natural language understanding (NLU) for analyzing the sentiment of the review.

- APIs from other vendors:
  A. Google Places API
  - used to get all the places visited by the customer
  - duration, place and mode of stay to learn about the customer's specific behaviour.

Getting the data

- The data we require is user reviews. We used Google Places API to get the user reviews .

- Reviews are taken for a specific place. This place is part of a list of places which were captured by issuing a request which gives a set of places (of interest and or restaurants for now).
  a
- Then we scrapped out the required fields which were the place id and the user reviews of that place. There are many other fields like userid and photos of the places etc., which can be put in order to enhance the UI.



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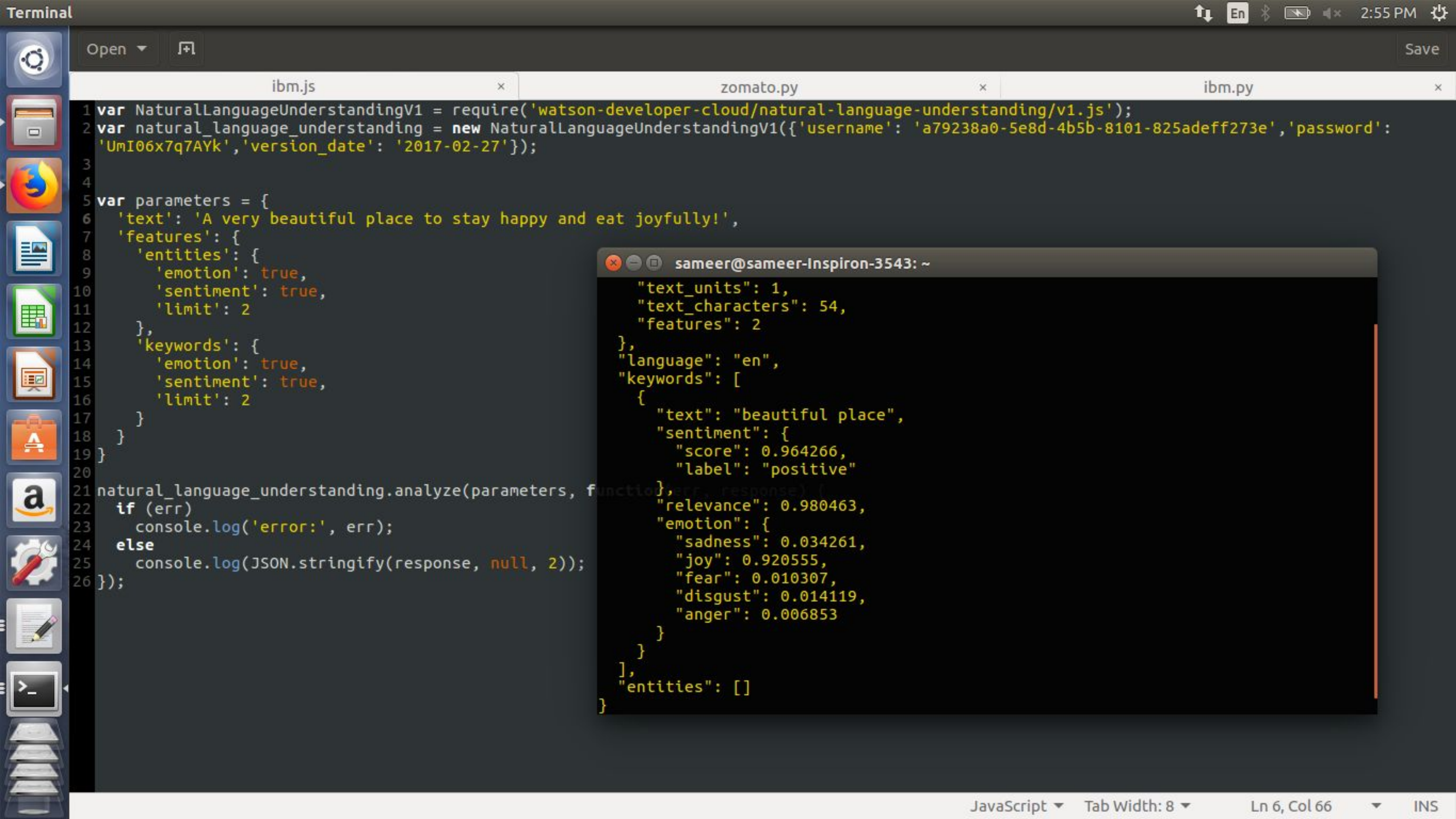
{'ChIJ62XomDMSrjsRAUc663qoLls': [['Food is nice and cheap.', 'No parking facility.', 'Very congested.', 'You can enjoy only if you are a
foodie ☺.'], ['Best place to spend time for the people who love keralian cuisine and also for chai lovers.', 'Evokes nostalgia.', 'The is
so refreshing u forget the stress if the day.', 'Must have tea every day place.'], ['Drop by, if u want to savor popular and traditional
evening snacks from Kerala.', 'It is a popular pit-stop for techies before heading off to work in the ITPL area.', 'Best time to visit here
would be from 3 PM to 5 PM to avail "freshly made" snacks.'], ['South Indian restaurant with good food tastes and has decent amount of non
veg varieties.', '.', '.', 'Try for some good Kerala style food as well.', '.', '.', 'Near marathahalli junction and bridge.', '.', '.',
'Price range is bit high.', '.'], ['Nice place.', 'A good option to taste some Northern Kerala food.', 'Feels like home.']],
'ChIJbQCAp0MUrjsRjTmLPORnr2Q': [["Great rooftop but service and menu don't match up to it - We had reserved this place for a Friday evening
team dinner.", 'The roof top ambience was really amazing.', 'We reached around 7pm the manager led us to the table that was reserved for
us.', 'We waited quite a while for them to serve the starters and the welcome drink.', 'All of us were surprised at the service speed, it
took ages for them to serve the dishes.', 'Now coming to the variety it was very minimalist with 3 Veg and 3 Non-Veg starters.', 'The main
course spread was also limited.', 'It was a big disappointment not worth the money.'], ['Service was not good.', 'Less main course.',
'Ambience and place was good.'], ['We had great service and at 1/4 the price, this would be a 5 star review.', 'However, the degustation
menu was well in excess of €200 each and at this price and our first visit to a Michelin 3 star we expected more.', 'Good - service was
excellent, breads were superb, very nice ambiance, plating and presentation are 1st class, cheese selection was outstanding, desserts were
pretty good  Bad - price, many dishes had underdeveloped flavors, fairly boring ingredients (asparagus, beef sirloin, etc.', ")  All in all
it's a good meal with first class service.", 'But we expected a Michelin 3 star to be more than a good meal.', "For us, it wasn't our best
meal of the day and as far as haute French Dining go, we prefer the French Room in Dallas."], [], []], 'ChIJVVVV0ZA9rjsRz4pqp672Fwo':
[['This place is the MOTHER of desi Chinese grub.', 'The pork is amazing, the tom yum soup will make your eyes water and the special fried
rice is to die for.', "Pricing: couldn't be cheaper.", 'Ambience: what do u expect?', '(Not too bad).', 'Full points.'], ['Great place for
cheap, tasty, unpretentious Chinese food.', "It's rather poorly lit, and probably hasn't had a renovation since the early '90s, but don't
let that put you off.", "It's comfortable, homely, the food is good, and the hosts are warm and friendly."], ['One of the oldest Chinese
places in Bangalore.', 'Very budget friendly quaint place that exudes the old world charm.', 'The food is tasty.', 'The best noodles we have
tasted so far.', 'The staff is fast and friendly.', 'It can get really crowded on the weekends.', 'Good for takeaway too.'], ['Beautiful
place and decent budget hotel.'], ['Always great food - standard.', 'Chinese food in India is different from the same in China.',
'Especially if you have ever visited Tangra region in Kolkata, you will know what I mean.', 'The owner of Wanely, is basically from the same
area and you get the same taste here.', "It's like a mini Kolkata.", 'Also, the owner is a very interesting person - not much interested in
business expansion - just happy with what is happening there.']], 'ChIJZzX0CzIVrjsRj5qDgNmmFdk': [['The service was really good for us.',
'.', 'we had booked the 1st floor party hall.', '.', 'the ambience was good enough too.', 'The location is a bit noisy as its adjacent to
Bannerghatta main road.', 'Food isnt exceptionally good or anything but its pretty good enough.', 'atleast more than what we expected.',
'.', 'we had come as a corporate group and the setting they had made for us was really good.'], ['Very good food.', 'Very nice place.',
'Will come back soon.'], ['great service by mr.', 'vinay and prasanna, liked personal attendance.', 'good food too.', 'dr.'], ['Quick
service, Tasty food and nice ambiance.', 'Perfect place for friends and even families as well.', 'The food is affordable and the place is
neat.'], ['Regular visitor here for the last 10years.', '.', '.', 'off late the place is more suitable for bar, than a family dinner.', 'But
the pepper chicken tastes the same all through this year.', 'Awesome pepper chicken.', '.', '.']], 'ChIJOTfmuhUVrjsR0YsPD7vWE7A': [[], ['I
will never order biriyani again.', '.', 'Therw was no taste.', 'Qulity qnd quntity both not good.', '.'], ['Pros:Kolkata katti rolls are
good.'], ['Excellent meats.', 'Slow service and a small place.'], ['Good north Indian food.', '.', '.']], 'ChIJ4Z-d36UTrjsR9IMvMQs2mps':
[['Veg food ok.', '.', "Don't try fish here.", '.', "it sucks Don't buy fish if it's displayed as today's special .", "It's old fish which
```

Approach

- Pass the reviews to NLU and get the sentiment and its score.
- Then for each user review , create a positive , negative score by categorizing the keywords and their scores into positive , negative and neutral .
- Then we rated the particular place based on the place_id , by using our rating technique where we combine the aggregates of positive and negative scores of a review and get the final score .
- Sort the final scores and give them their ranks.
- Then finally we can recommend customers based on our approach which is enriched with NLP brain of Watson.



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var natural_language_understanding = new NaturalLanguageUnderstandingV1({'username': 'a79238a0-5e8d-4b5b-8101-825adeff273e','password':
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      'sentiment': true,
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    }
  }
}

natural_language_understanding.analyze(parameters, function(err, response) {
  if (err)
    console.log('error:', err);
  else
    console.log(JSON.stringify(response, null, 2));
});
```

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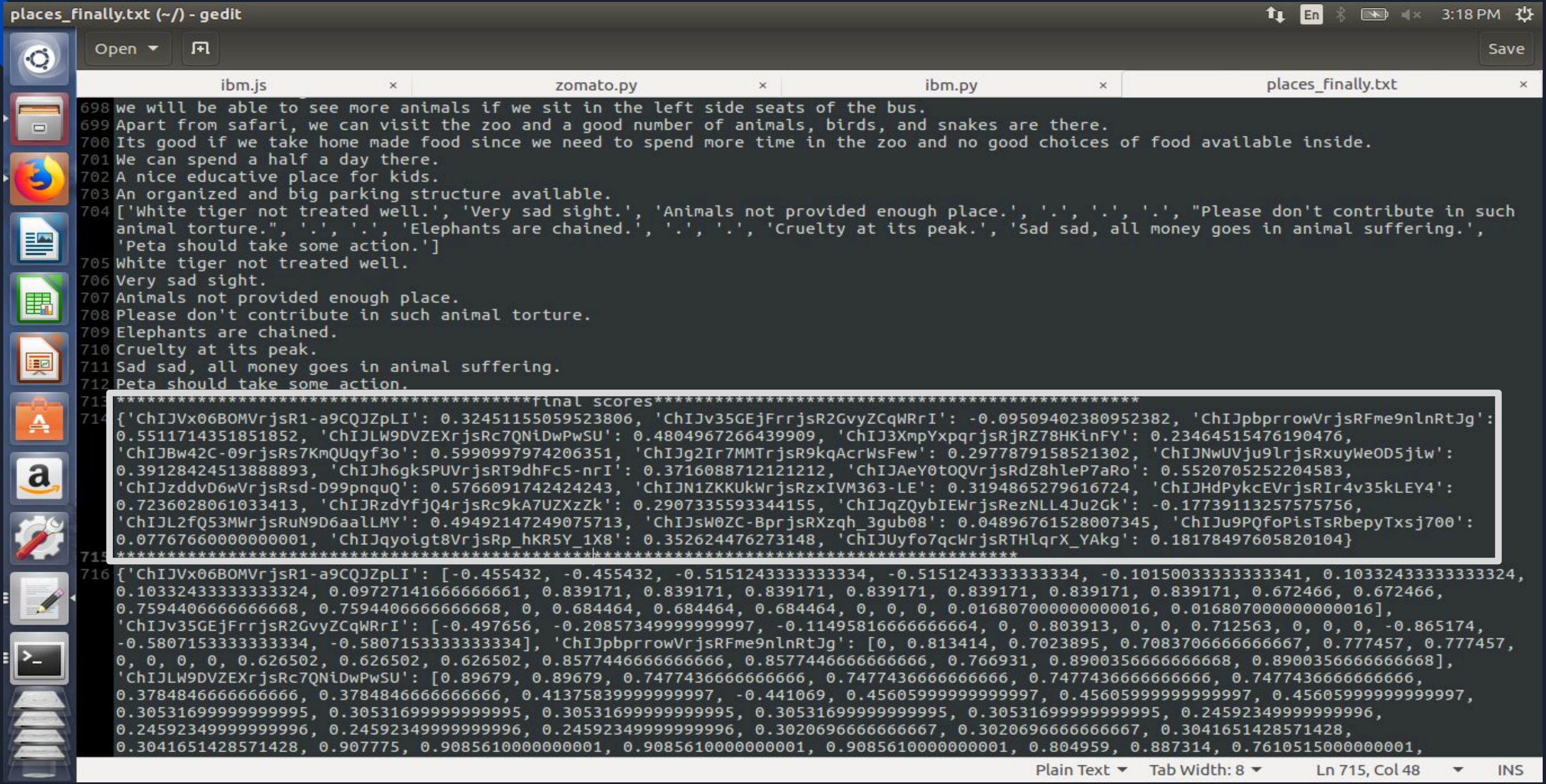
Final Scores of Places



```
we will be able to see more animals if we sit in the left side seats of the bus.
Apart from safari, we can visit the zoo and a good number of animals, birds, and snakes are there.
Its good if we take home made food since we need to spend more time in the zoo and no good choices of food available inside.
We can spend a half a day there.
A nice educative place for kids.
An organized and big parking structure available.
['White tiger not treated well.', 'Very sad sight.', 'Animals not provided enough place.', '.', '.', '.', "Please don't contribute in such
animal torture.", '.', '.', 'Elephants are chained.', '.', '.', 'Cruelty at its peak.', 'Sad sad, all money goes in animal suffering.',
'Peta should take some action.']
White tiger not treated well.
Very sad sight.
Animals not provided enough place.
Please don't contribute in such animal torture.
Elephants are chained.
Cruelty at its peak.
Sad sad, all money goes in animal suffering.
Peta should take some action.
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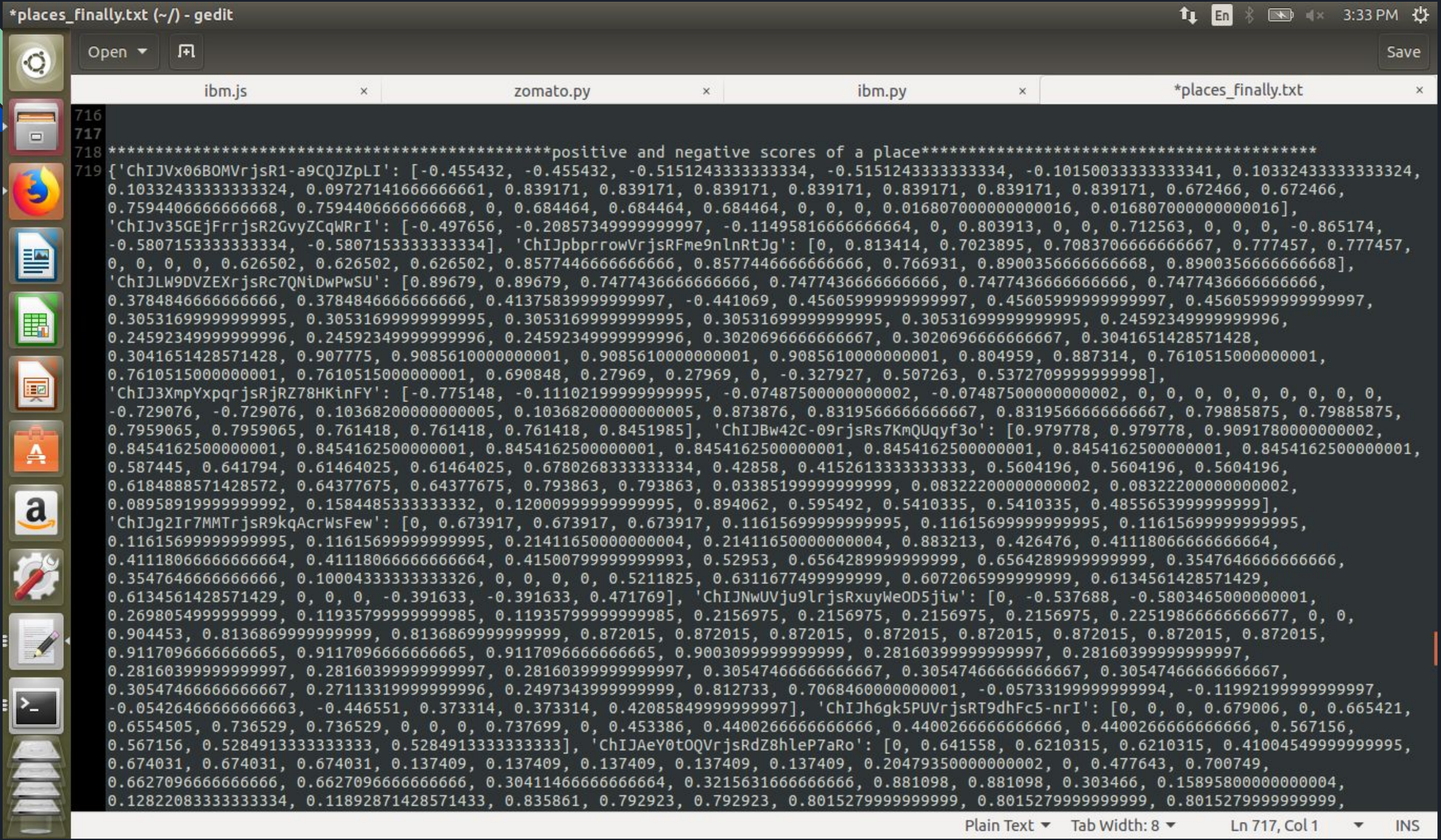
Approaching Burning Issues:

- After ranking , our aim is to let the authority know about the negative issues which people are facing at their place.

- So , as our approach creates a list of negative keywords along with their scores , we will take all the negative keywords from all the users and see which of them are more prevalent among all of them.

- Since we have the respective places_ids mapped to the negative keywords , we can submit the top issues to the organization and let them improvise on these issues.

Look + vs -



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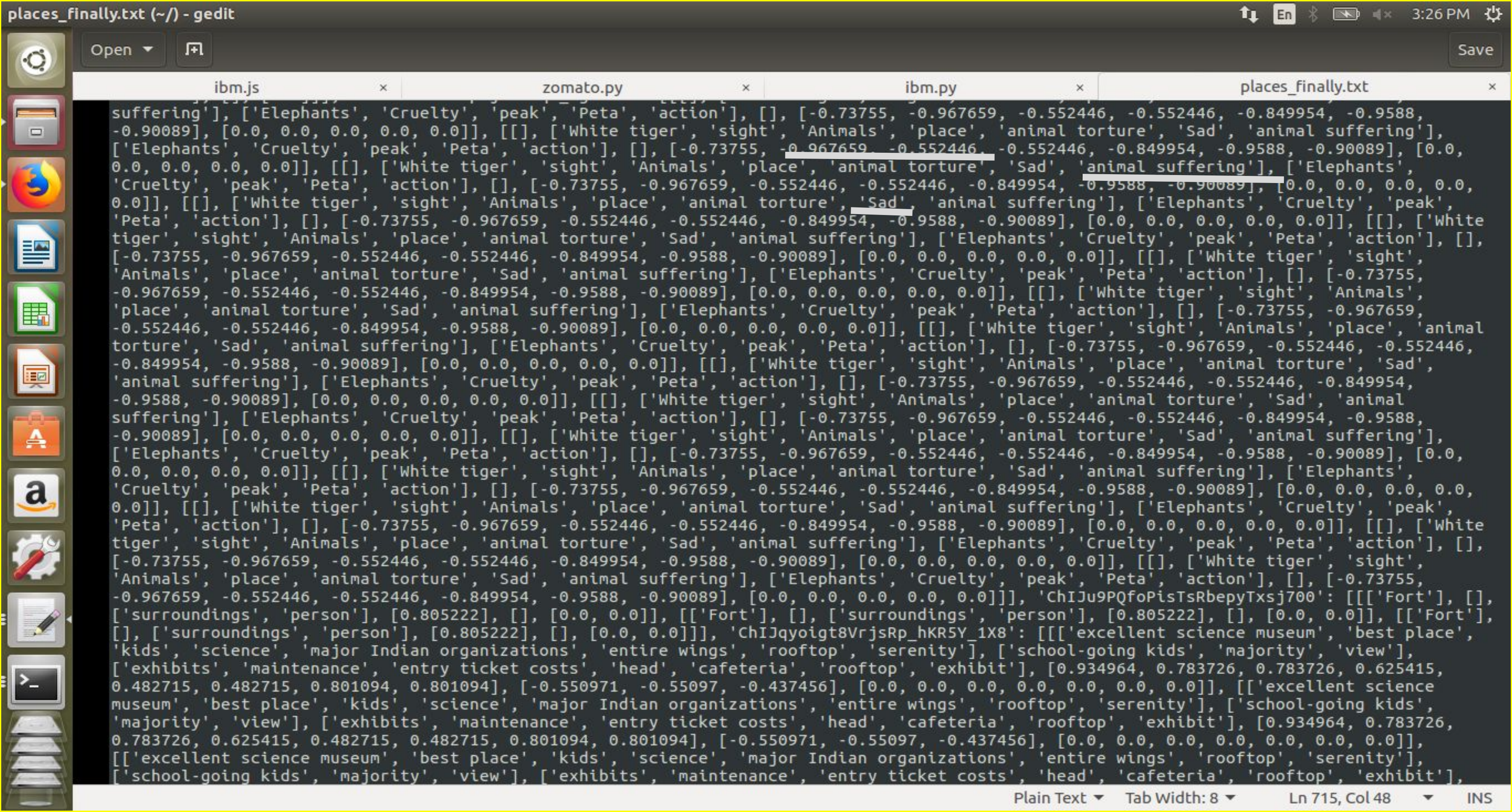
Negative Issues



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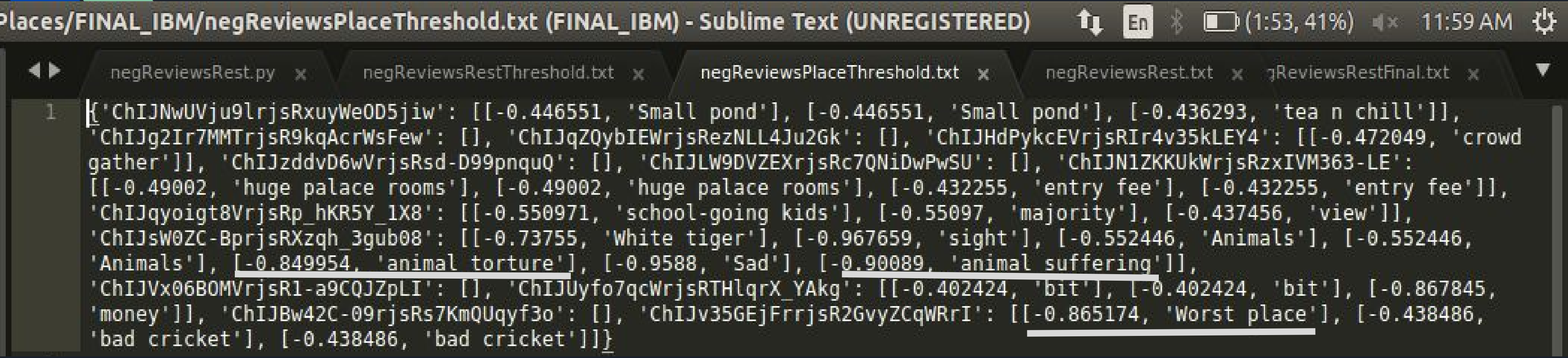
Which Issues to choose???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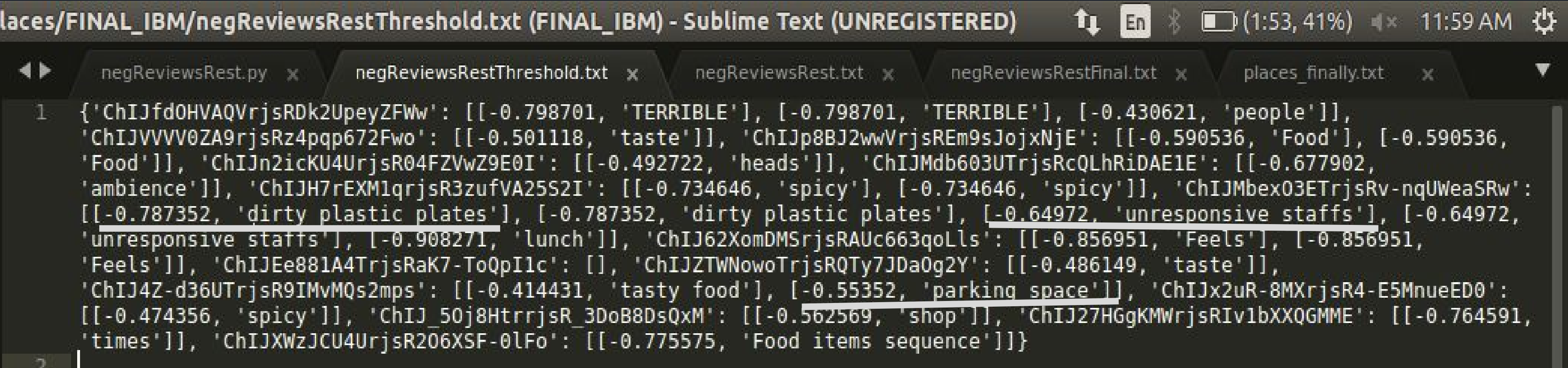
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Future Enhancements

- Extend it for transportation , so that it can become something like a “***DEEP - Travel Agent***” .

- Put NLC and take the user reviews and categorize accordingly to a scoring formula, much like a ranking algorithm.

- Placing it on to chat agents like ***Cortona*** , ***Siri*** , ***Google now*** for ease of use. (chat bot with watson would be helpful for easy integration with NLU).

Thank you.