

FOOD INSPECTOR

Predict Restaurant Inspection

- Done by
- MIHIR SIRPAUL E19CSE217
- VIVAN SINGH CHAUHAN E19CSE249
- DAKSH JAIN E19CSE121
- SIDDARTH MITTAL E19CSE411

Contents

- Introduction
- Problem
- Related Work
- Proposed Methodology
- Experimental Results
- Solution
- References

Intro

Nowadays most of the cities have hundreds of restaurants, so food inspection has become a necessity. like in our country India, where the population is high and the number of restaurants is also high, so manual food inspection is very random and inefficient so many places which are very unhygienic are left over and a lot of people consume that unhygienic food. So instead of manual inspection, many people post their reviews on different social websites like Zomato, swiggy, Justdial and based on those reviews, we can focus on the restaurants which are tagged as unhygienic in the reviews.

So, sir our main target is to develop a model which will gather data from these social websites and will narrow down our search. Our algorithm will detect words, phrases, and different such patterns or features to help make the restaurants as unhygienic and also help the food inspection department to focus on these restaurants.



Problem Statement

The main problem that we identified is with the Food Inspection Department. As the number of restaurants is high, manual food inspection is very random and inefficient so many places which are very unhygienic are left over and a lot of people consume that unhygienic food which is the problem and also so much time is wasted for the department through manual inspection.

Related Work

DrivenData created a prediction challenge in collaboration with Yelp and Harvard, as well as the City of Boston, to link Yelp reviews and ratings to the results of Boston's sanitary inspections. The purpose was to leverage social media data to narrow the search for health code violations in Boston, identifying the words, phrases, ratings, and trends that indicate infractions and assisting public health inspectors in their work. Individuals and organisations are increasingly leveraging the material in various media for decision-making, thanks to the phenomenal rise of social media on the Internet.

Proposed Methodology

Sentiment analysis is the computational task of automatically determining what feelings a writer is expressing in text. Sentiment is often framed as a binary distinction (positive vs. negative), but it can also be more fine-grained, like identifying the specific emotion an author is expressing (like fear, joy or anger), that is what we did to identify the feelings of users towards that restaurant based on the reviews scrapped into the database.

Extracting various features that may affect a restaurant's overall rating like (Online order, reservation available, rate, votes, cuisines, reviews) we parsed them into an LSTM model to analyze the overall sentiments users had for the restaurants which later can be used to predict the likely hood of a restaurant being "good" or "bad"

RESULTS



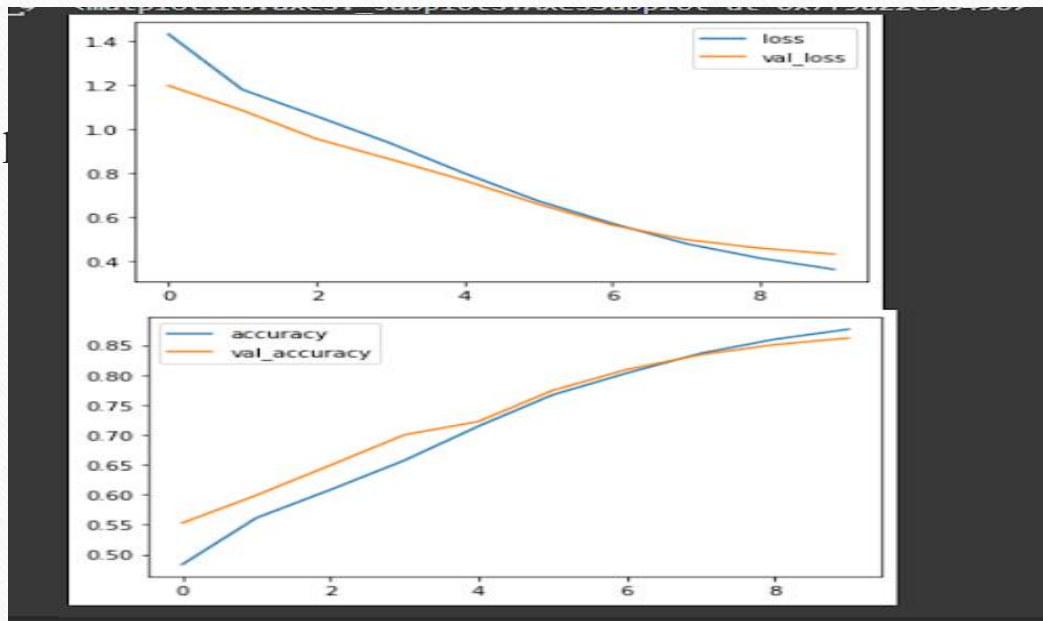
Experimental Results

Accuracy and Metrics

From our dataset we split our data into 90% training and 10% testing data.

Smaller Dataset(3000 rows): - Accuracy : The results of this model is having **86.19%** accuracy

ROC Curve :



Metrics:

Test R2: 0.7668

Train R2: 0.8748

Test MSE: 0.0217

Train MSE: 0.0129

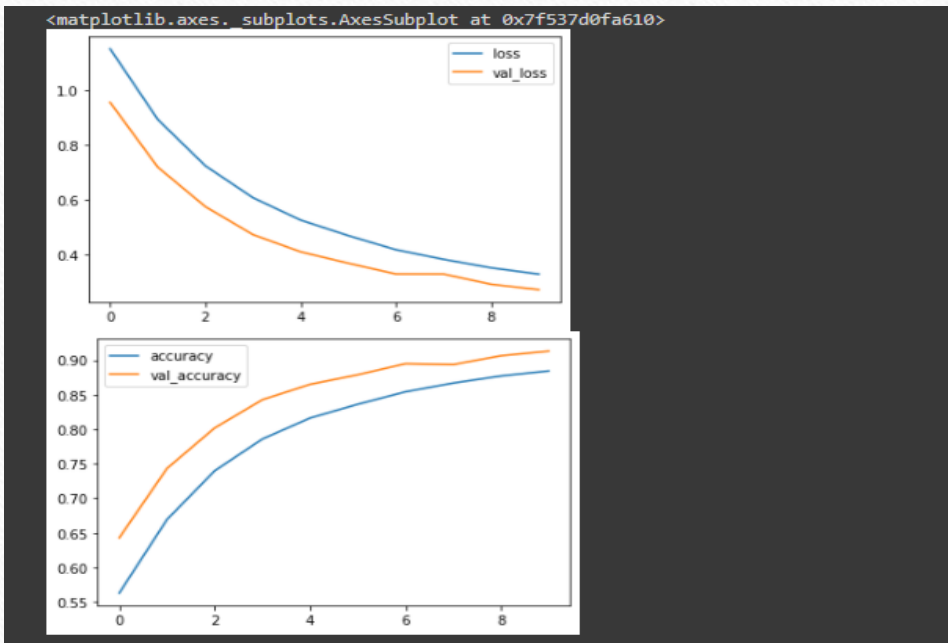
Test RMSE: 0.1475

Train RMSE: 0.1136

Bigger Dataset(25000) :

Accuracy : The result of this model is having **91.31%** accuracy.

ROC Curve:



Metrics:

Test R2: 0.8322
Train R2: 0.8899

Test MSE: 0.0144
Train MSE: 0.0098

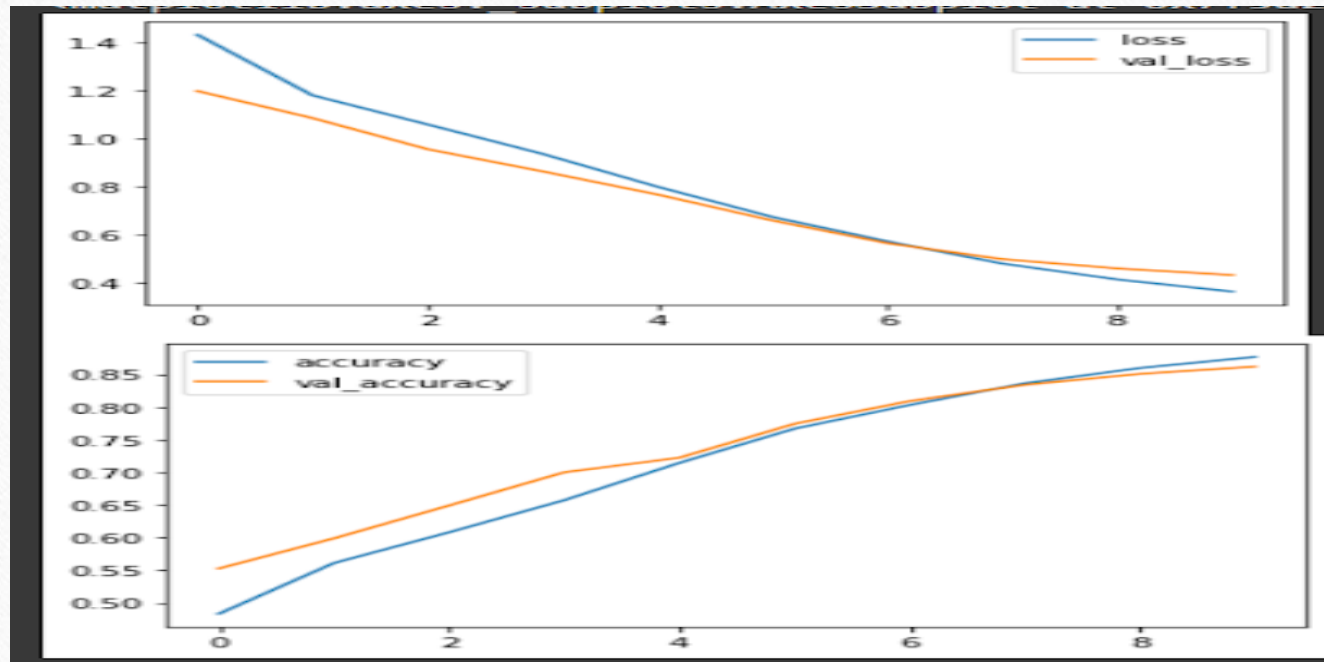
Test RMSE: 0.1200
Train RMSE: 0.0989

We first trained the model using the adam optimizer and the epoch set to 15, here are the results:

Accuracy :

The results of this model is having **88.94%** accuracy.

Roc Curve:

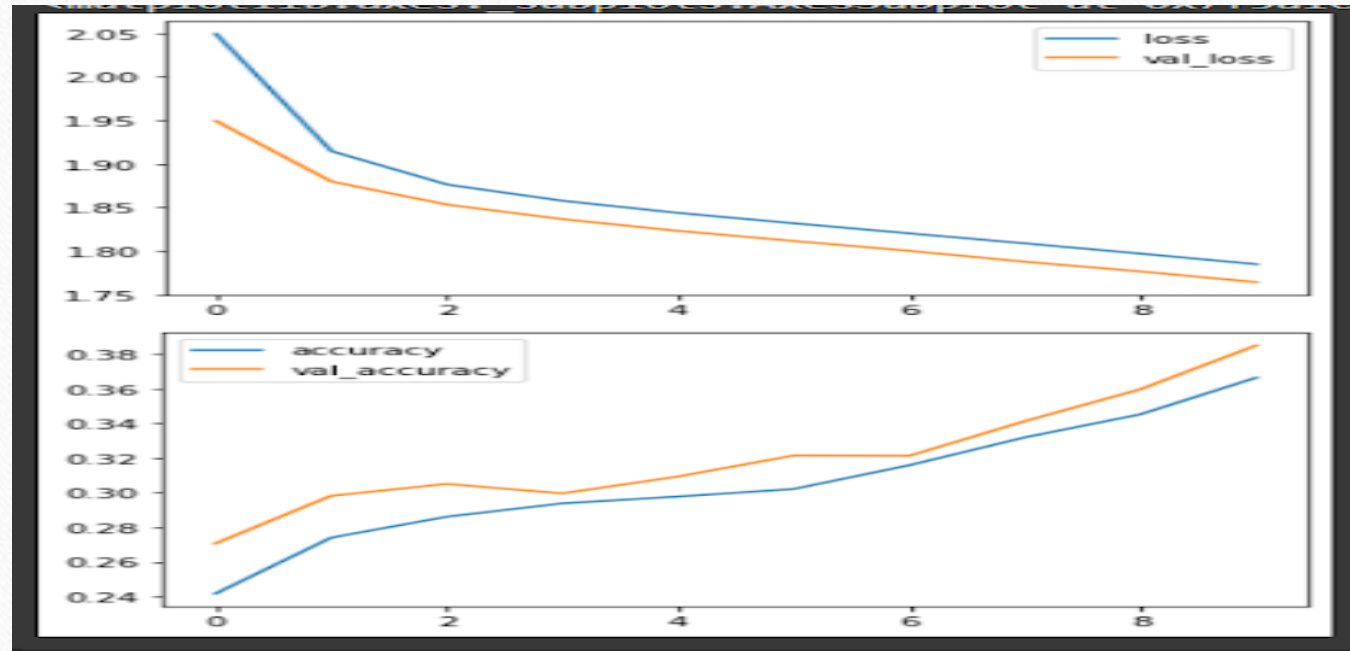


Changing the Optimizer and the Layers:

We changed the optimizer from adam to sdg to test out the accuracy for our model.

Accuracy : 44.01%

ROC Curve:



***Problem that our project
solves***



Solution

Our project is helping the Food Inspection Department of the particular area by providing the details and tags about the restaurants whether that restaurant is hygienic or unhygienic which saves a lot of time of the department by avoiding them to do the manual inspection of the restaurants.

REFERENCES

- Putraranti, N. D., & Winarko, E. (2014).
- Support Vector Machine.
- <https://doi.org/10.22146/ijccs.3499>
- Farhadloo, M., & Rolland, E. (2016). Fundamentals of sentiment analysis and its applications.
- https://doi.org/10.1007/978-3-319-30319-2_1

LinkedIn Post



Mihir Sirpaul

Student at Bennett University

3h • Edited •

Hello, connections!!

I and my team – [Siddharth Mittal](#), [Daksh Jain](#), and [Vivan Singh Chouhan](#), are working on "Food Inspector : Predict Restaurant Inspection" as our AI- ML semester project.

Nowadays most of the cities have hundreds of restaurants, so food inspection has become a necessity. Like in our country India, where the population is high and the number of restaurants is also high, so manual food inspection is very random and inefficient so many places which are very unhygienic are left over and a lot of people consume that unhygienic food. So instead of manual inspection, many people post their reviews on different social websites like Zomato, swiggy, Justdial and based on those reviews, we can focus on the restaurants which are tagged as unhygienic in the reviews.

Our main target was to develop a model which gather data from these social websites and will narrow down our search. Our algorithm detect words, phrases, and different such patterns or features to help make the restaurants as unhygienic and also help the food inspection department to focus on these restaurants.

We would like to thank [Vipul Kumar Mishra](#), [Dr. Sridhar Swaminathan](#), [Vivek Mehta](#) and [CSET Bennett University, India](#) for providing us the opportunity to showcase and develop our skills.

CSE Bennett University, India

[#machinelearning](#)





THANK YOU

