

A Synopsis on

Sentimental Analysis on Social Media

Submitted in partial fulfillment of the requirements
of the degree of

Bachelor of Engineering

in

Information Technology

by

Dilesh Tanna (16104064)
Manasi Dudhane (16104068)
Amrut Sardar (15104050)

Prof. Kiran Deshpande
Prof. Neha Deshmukh



Department of Information Technology
A.P. Shah Institute of Technology
G.B.Road, Kasarvadavli, Thane(W), Mumbai-400615
UNIVERSITY OF MUMBAI
2019-2020

CERTIFICATE

This is to certify that the project Synopsis entitled "*Sentimental Analysis on Social Media*" submitted by "*Dilesh Tanna (16104064), Manasi Dudhane (16104068), Amrut Sardar (15104050)*" for the partial fulfillment of the requirement for award of a degree *Bachelor of Engineering in Information Technology* to the University of Mumbai, is a bonafide work carried out during academic year 2019-2020.

(Prof.Neha Deshmukh)
Co-Guide

(Prof.Kiran Deshpande)
Guide

Prof. Kiran Deshpande
Head Department of Information Technology

Dr. Uttam D.Kolekar
Principal

External Examiner(s)

1.

2.

Place:A.P.Shah Institute of Technology, Thane

Date:

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(Dilesh Tanna 16104064)

(Manasi Dudhane 16104068)

(Amrut Sardar 15104050)

Date:

Abstract

Social media consists of various kinds of emotions and sentiments of its users in the form of electronic media. To analyze the reactions or sentiments of the users on a certain post is also a challenging task. Our project aims to automate this task of analyzing the reactions and the posts and generate a report based on the outcome. A custom social media platform is proposed that would give the ability to the users to perform activities that they would normally perform on any other social media platform. The users can be enrolled into different groups such as a business or a university. This platform would have the ability to perform sentiment analysis on all the activities of the users in a group and create a report for the high level user of that group. Every activity would be rated based on the sentiments behind it and the appropriate admin would receive the reports which can be used for the future actions. Analysis would be performed on various factors such as the response of other users on a post. This would facilitate the decision making process and it will also help detect any need to give special attention to any user in a group such as a student coping up with depression or stress. Also, the proposed platform can be used to share content on other social media platforms as well. As a result, the users would have a single platform with the ability to do a lot more than any existing social media platform facilitate.

Introduction

Existing social media platforms don't give us the privilege to track the activities of the users and analyze the user's behavior for future predictions such as what to post, when to post and whom to target. The user would receive feeds based on their interests recorded by the system through their past behavior. A user would also be able to share a post on other supported Social media platforms. Sentiment analysis on a user's activities would generate a report for the admin of a group that the user belongs to; such as the Head of a Department or a college counselor. The administrators may take further actions based on the report. In a corporate world or a university, it can be considered important to keep track of the related population's sentimental behavior towards the institution as it gives a great amount of detail about how the user feels about being a part of that institution and in what way should the institution engage further with the concerned user. A social media with the ability to perform sentiment analysis and produce a report for the 'high level' users is not a mere content sharing platform anymore. It becomes a full-fledged authoritative tool which would facilitate the decision making process.

Objectives

The main objective of this project is to develop a social media platform and person sentiment analysis on the content posted on it hence, taking every counter measure to help any user in any possible way in case if some sort of extremity in behavior is noticed, such as depression.

Literature Review

Hutto C.J., Gilbert E.[1] have proposed VADER, which is a simple rule-based model for general sentiment analysis, and compare its effectiveness to common state-of-practice benchmarks including LIWC, ANEW, SentiWordNet, and machine learning oriented techniques relying on Naive Bayes, Maximum Entropy, and Support Vector Machine (SVM) algorithms. It uses a combination of qualitative and quantitative methods. VADER then combines these lexical features with consideration for five general rules that embody grammatical and syntactical conventions for expressing and emphasizing sentiment intensity. When compared to sophisticated machine learning techniques, the simplicity of VADER has several advantages. First, it is both quick and computationally economical. It takes a fraction of a second to analyze with VADER can take hours when using more complex models like SVM. Second, rules used by VADER are accessible. [1]

Anees Ul Hassan [2] has presented that how to program a machine to analyze the different grammatical words, cultural variations, take out emotions, and get sentiment and meaning behind that words using machine learning techniques. Author has made a comparison among Support Vector Machine, Naïve Bayes and Maximum Entropy classifiers regarding sentence level sentiment analysis for depression measurement. Author has examined the performance of our proposed methods on two datasets, twitter dataset and 20newsgroups. [2]

Fabio Persia and Daniela D'Auria[3] have discussed challenges and opportunity in Online Social Networks (OSN). They have highlighted two main challenges; first, it is very important for OSN users not only to share media content but also to receive the specific media they want to see more. Second, to secure users who are followed by more number of users and for them who share too much of their personal information. Author has focused his attention on the relevant research challenges regarding semantics and security. Author has introduced the challenges of sentiment detection, and coping with phishing attacks, Sybil attacks, and spamming. Thus this paper has outlined a new research agenda in the field of OSN as well as it is a knowledgeable for the everyday users. [3]

Rosa, R. L. [4] and co-authors have introduced the procedure to identify the intensity of the sentiments behind the phrase put on social media platform by a user and phrases with emotional contents will be filtered through a Machine Learning program such as pronouns and adjectives verbs, etc. They have introduced to a solution that notify to other persons such as doctors or relatives about the potential emotional behavior of the user. An authorized person will have the information about the specific user for considering as counter action. [4]

Problem Definition

User data is precious and would reap great results for an institution like a college or a business to make their decisions. Decision making can be a very risky job when it comes to taking huge decisions although, small decisions such as what to perform, when to perform and with/for whom to perform a certain task can collectively result into benefits. The existence of a system that facilitates this using the social media behavior of the point of interest of the institute can be a game changer when it comes to decision making. The electronic media serves a great role in data mining and making effective use of it right from the beginning is something that would help everyone. The ability to enroll a set of users in a group, share a message to various platforms from one place and also analyzing the users in the group is something that can be considered a problem to solve.

Proposed System Architecture/Working

A social media platform with the ability to perform sentiment analysis for 'high level users' is the desired outcome of this project. The platform would allow almost all activities that a normal social platform does. The user would be able to share content and view other users' content and express their personal views on the same. A user can be enrolled into different groups such as a business or a university. The user would also be able to share content from one this platform to other social media platforms. The other aspect of the project is the sentiment analysis part where all the activities of a user in a group would be analyzed. The flow of the analysis is as follows:



Design and Implementation



Figure 1: USE CASE DIAGRAM

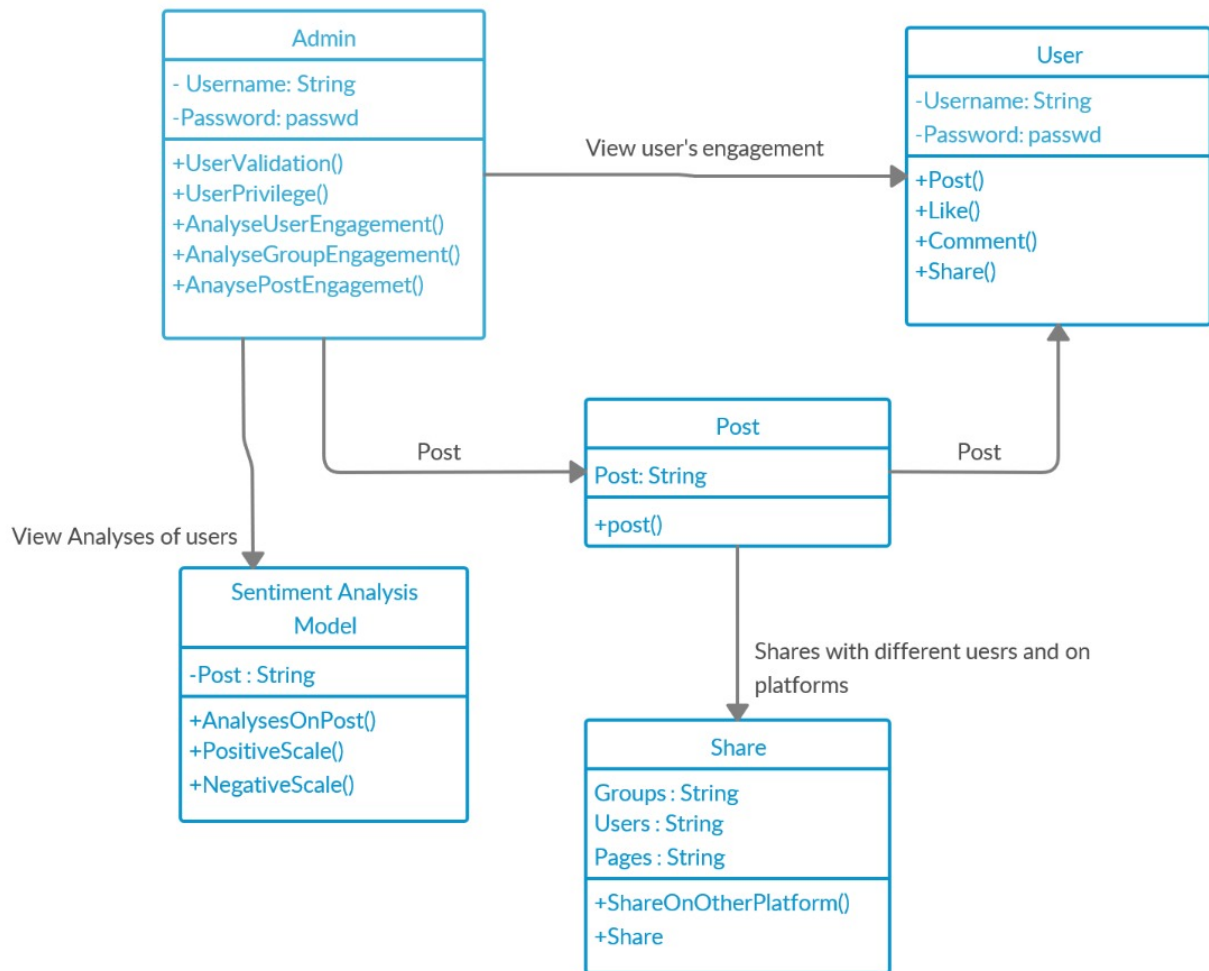


Figure 2: CLASS DIAGRAM

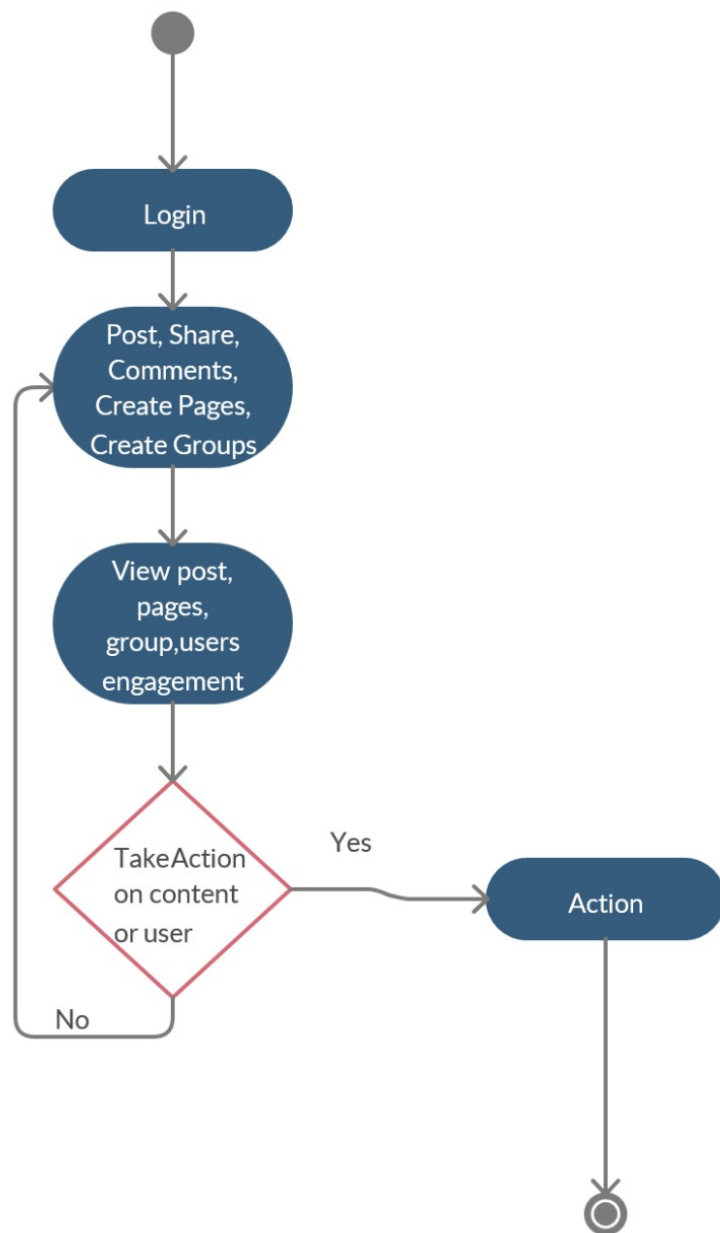


Figure 3: ACTIVITY DIAGRAM

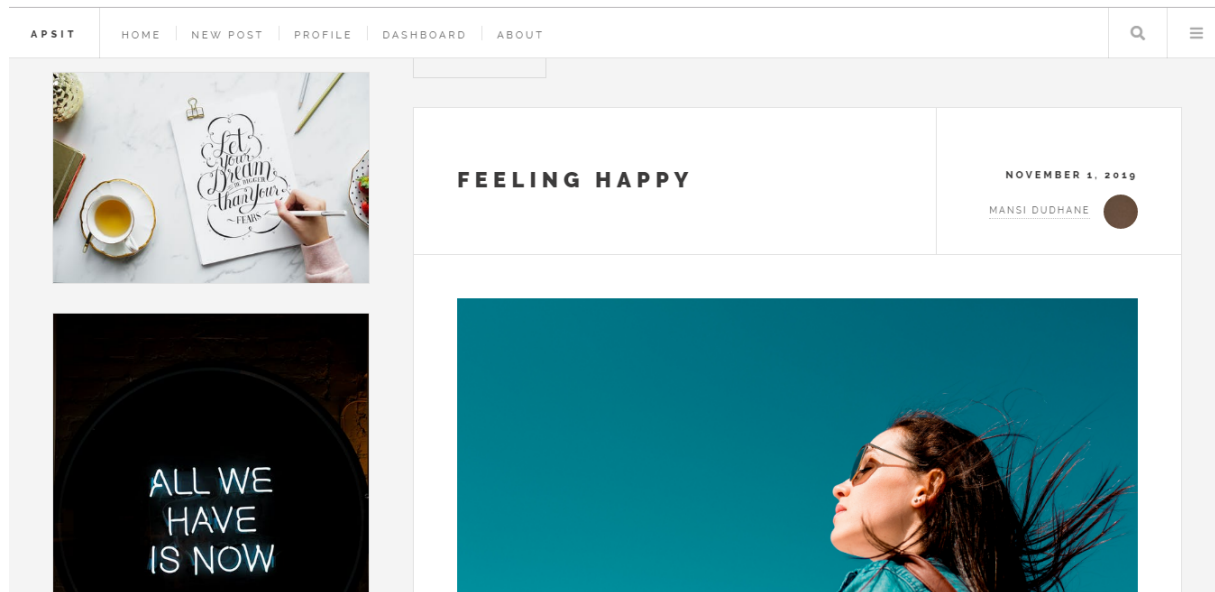


Figure 4: Homepage

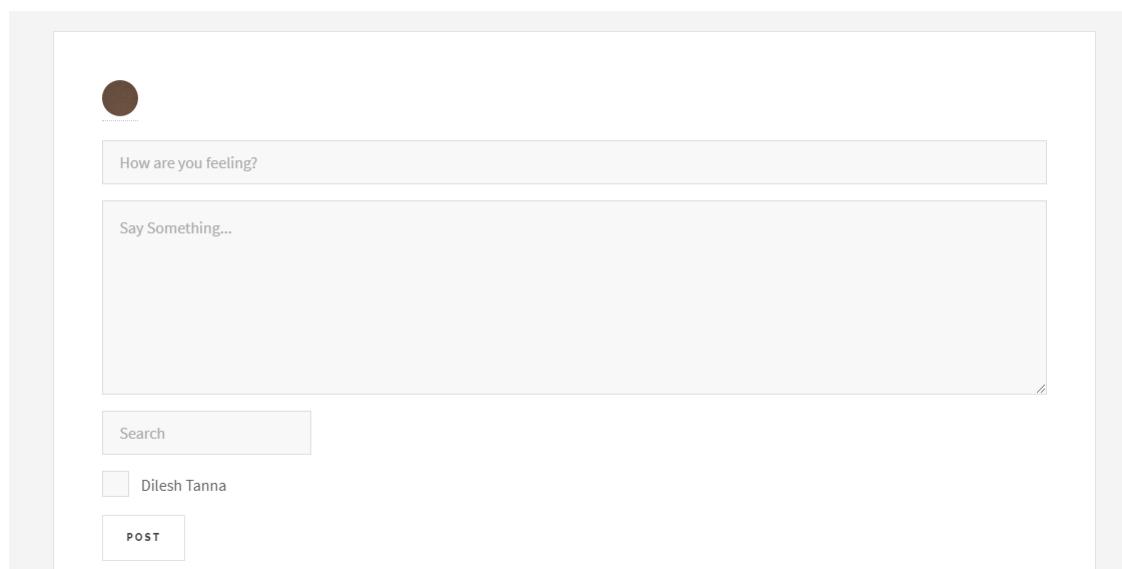


Figure 5: New Post Page

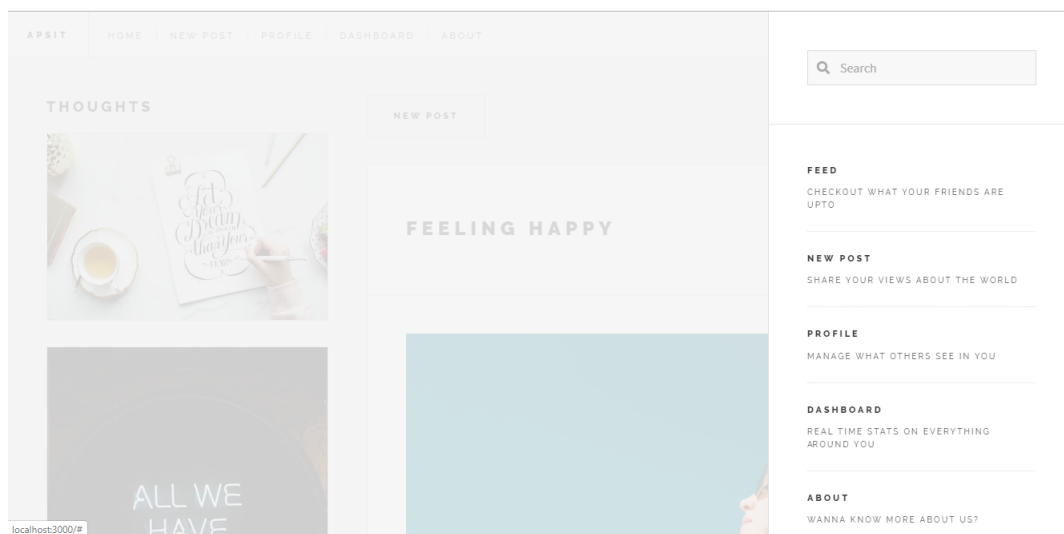


Figure 6: Navigation Menu

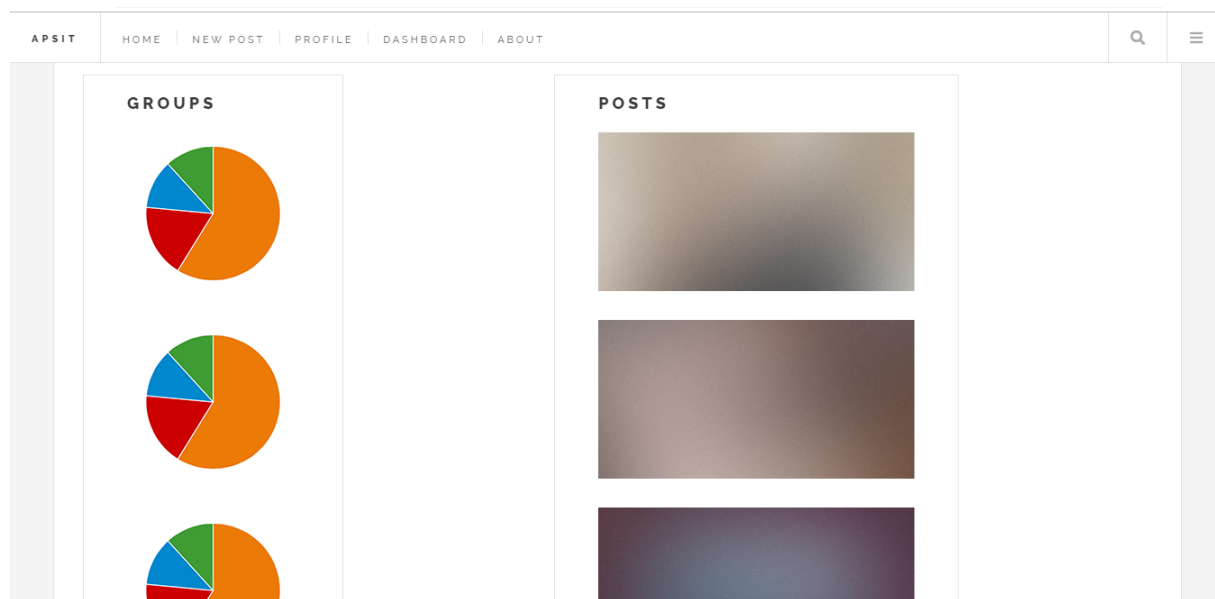


Figure 7: Dashboard

```
depression_detection=# \dt
      List of relations
 Schema | Name   | Type  | Owner
-----+-----+-----+-----
 public | posts  | table | postgres
 public | users  | table | postgres
(2 rows)
```

Figure 8: Database Schema

```
depression_detection=# select * from posts limit 1;
 id | username | post | date | intensity
----+-----+-----+-----+-----
  1 | dilestanna | Hello! I am sadd today+ | Thu Aug 01 2019 11:37:44 GMT+0530 (India Standard Time) | 0
(1 row)
```

Figure 9: Post table

```
depression_detection=# select * from users limit 1;
 id | username | email | phone | password | score
----+-----+-----+-----+-----+-----
  2 | amrutsardar | amrut@gmail.com | undefined | $2a$10$sQPfSRzqLHUD1BEkfl3Kt0A3js8EkkXI/96fkYxKoa1YA9925w0xa | 0.5719
| false
(1 row)
```

Figure 10: Users Table

```

router.post("/create-post", async (req, res, next) => {
  let username = req.body.username;
  let post = req.body.post;
  let date = new Date();

  const intensity = vader.SentimentIntensityAnalyzer.polarity_scores(post);
  let id = await db.any(
    `insert into posts(username,post,date,intensity) values('${username}','${post}','${date}','${
      intensity.compound
    }') returning id`
  );

  let score = await db.any(`select * from users where username='${username}'`);

  score = score[0].score;
  score = +score + +intensity.compound;
  console.log(score);
  await db.any(
    `update users set score='${score}' where username='${username}'`
  );

  let result = await db.any(
    `select username,post,date from posts where id='${id[0].id}'`
  );

  res.status(200).json({
    status: 200,
    data: result,
    message: "Created One Post"
  });
});

```

Figure 11: Back-end code on nodejs to generate score of a post before saving it to the database

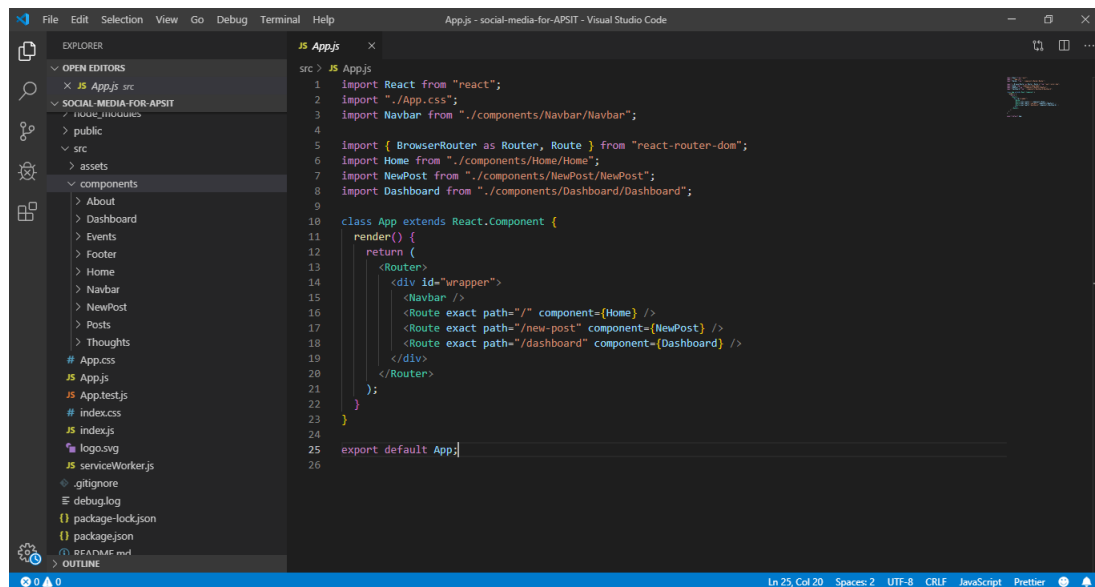


Figure 12: React code and app structure

Summary

Our solution would provide various groups such as Educational Institutes or Businesses to analyze the sentiments of the users related to their community circle. The analysis would not only help them improve their future activities but also help in finding alarming situations such as depressed users. The solution uses modern technologies which make your application more Robust and secure. The users would still retain their privacy as their activities won't be tracked. Rather, they would only be analyzed.

References

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