University of Ontario Institute of Technology
Department of Electrical, Computer, and Software Engineering
Faculty of Engineering and Applied Science

SOFE 3700
Data Management Systems
Final Project

Make Twitter Great Again

Group 17

Member(s)		
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Abstract

In this report we discuss our work on creating a database that stores the tweets of the elected president of the United States of America (of the 2016 election): Donald Trump many of which are often viewed as controversial and perceived in a variety of ways depending on which media source's coverage is examined. This project aims to provide users with the opportunity to retrieve and display this information and then portray it in a variety of views to support an opinion, frame or view for discussion.

Introduction

In today's media and social network we get our news from "trusted" news organizations, but what if each organization had its own agenda? We would need to go to plan B: get available data ourselves and make an informed opinion. So far, there have only been archives and web pages storing Trump's tweets, we aim to provide the user with a variety of views that they can use to gain a different point of view on already available data that can paint a wholly different picture from the way new organizations frame it.

Our proposed solution provides a robust and reliable yet simple interface to the data as well as a locally hosted database which can be updated and secured by the user. This is achieved through the use of several modern frameworks like flask, alchemy, pandas as well as modern languages like HTML5 and CSS3.

Relation to other work

Main body of work

For this project our target is to collect data about Trump's tweets and store various information about them, this information can then be accessed to provide a variety of data through the front-end API. To achieve this we will be using HTML5 + CSS3 for the Front-end and Python + JavaScript for the back-end. We are accessing Twitter's API in order to scrape the raw data into a .csv file which will be read by a population script to fill up the database, PostgreSQL + pgadmin3 are used to build and maintain the database.

During implementation our difficulties with the front-end were mainly with hosting and formatting, because none of us have had experience with graphical design we needed to opt for a simple and functional design rather than anything professional-like and graphically impressive, with regards to hosting we chose to forego this route due to time constraints.
For back-end difficulties we had trouble figuring out the different frameworks needed to put together the functionality for the data scraping and populating of the database. We initially looked to use JSON but the querying of the Twitter API and JSON use proved more difficult than dumping the raw data into a .csv which is the method we ended up choosing.

Given another swing at the project we would do a few things differently, namely starting earlier in the semester with familiarizing ourselves with the different frameworks, this would allow us to make significant progress quicker when writing/modifying the code. Additionally, it we could look into finding royalty-free design templates to be used for the front-end display in order to achieve a more clean and professional look. Lastly, we can look into hosting the website to allow users access to the database through the web instead of local setups.

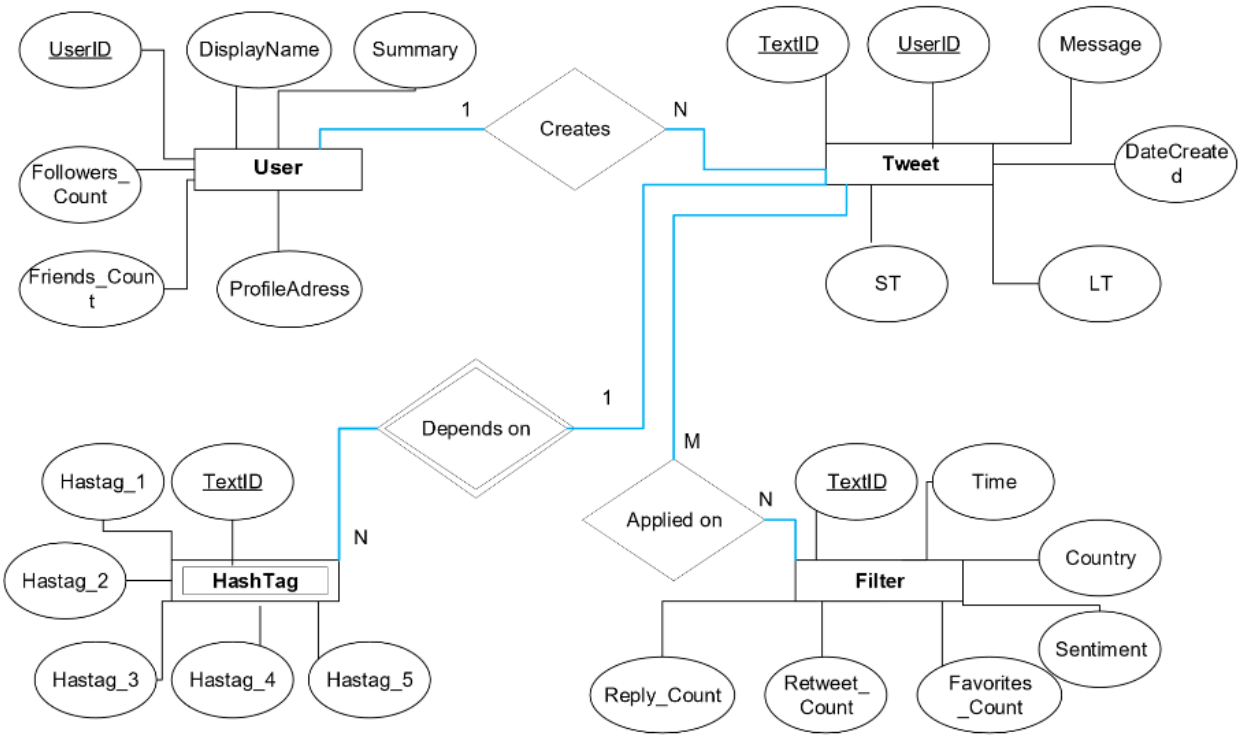
Conclusions with contribution made

Overall, we are satisfied with the quick and effective access of the data from the Twitter API and the wide selection of data that we could choose from, this wide selection allows us to provide different views of the data which can be useful to see trends and patterns.

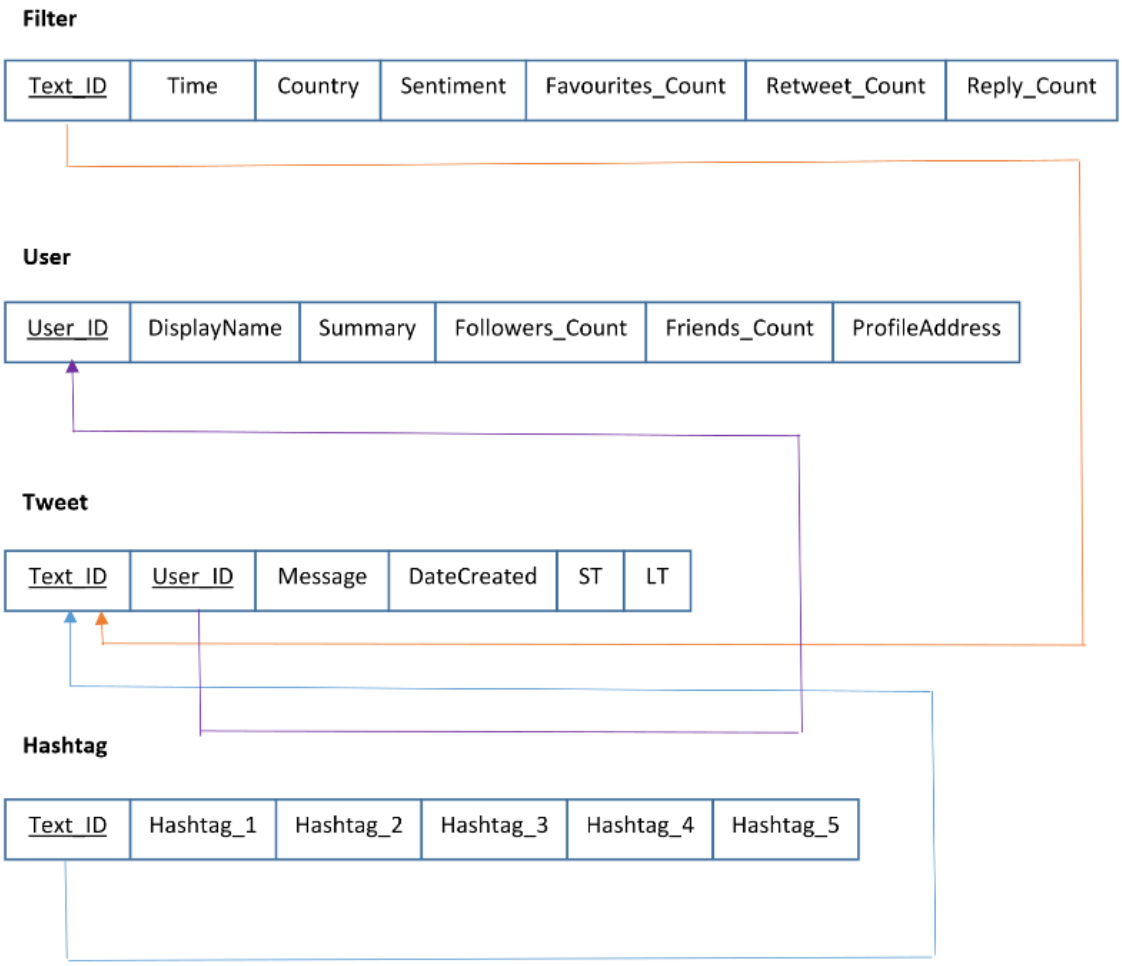
Some inconsistencies may be expected in the future if Twitter significantly changes its API functionalities.

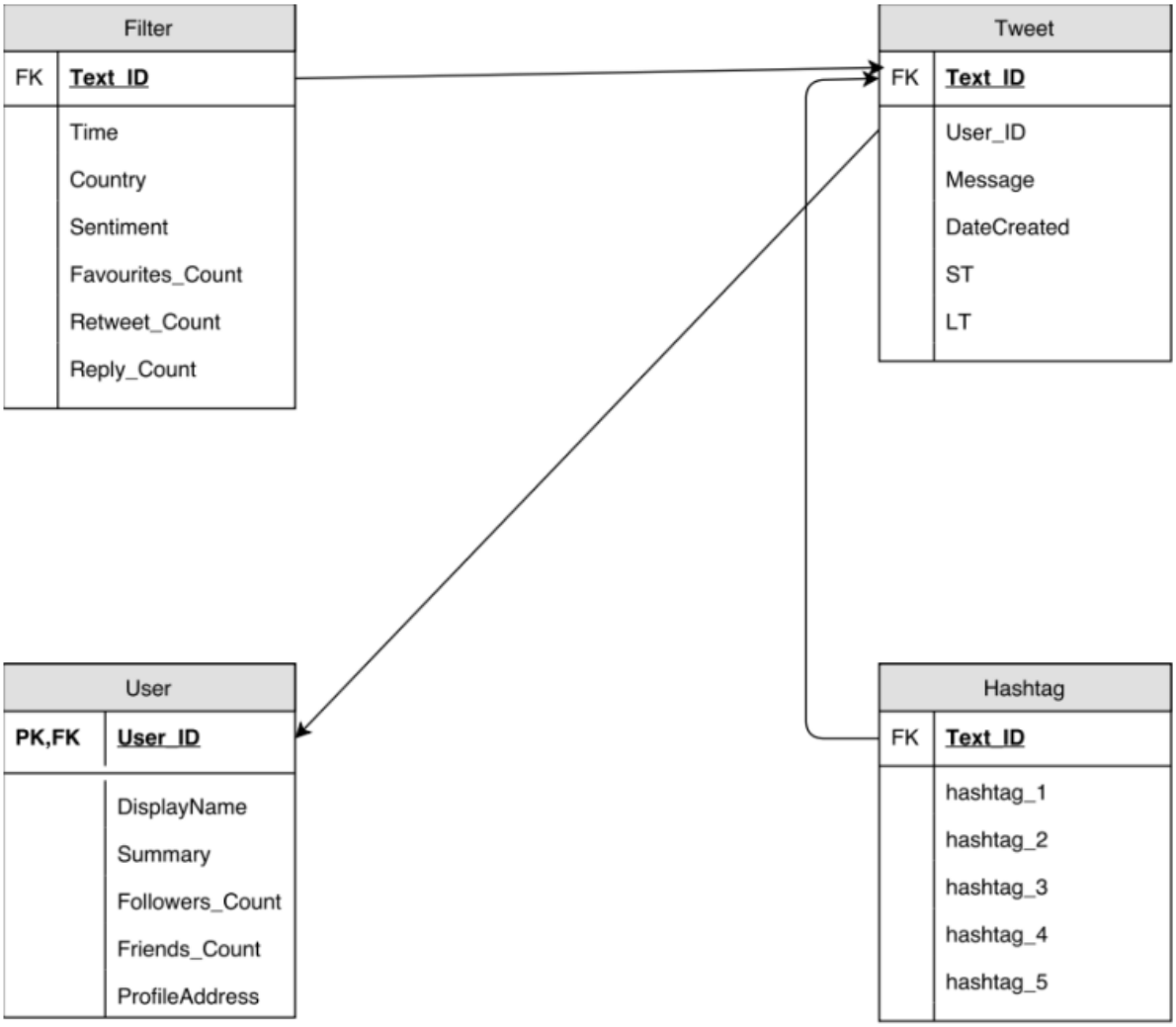
Schematics

ER Schema Diagram



Design diagrams




Filter
FK
Text_ID
Time
Country
Sentiment
Favourites_Count
Retweet_Count
Reply_Count
Tweet
FK
Text_ID
User_ID
Message
DateCreated
ST
LT
User
PK,FK
User_ID
DisplayName
Summary
Followers_Count
Friends_Count
ProfileAddress
Hashtag
FK
Text_ID
hashtag_1
hashtag_2
hashtag_3
hashtag_4
hashtag_5

View 1: Computes a join of at least three tables

```
SELECT *
FROM Filter as F INNER JOIN Tweet as T
ON F.Text_ID = T.Text_ID
INNER JOIN Users as U
ON T.User_ID = U.User_ID
```

View 2: Uses nested queries with the ANY or ALL operator and uses a GROUP BY clause

```
SELECT DisplayName
FROM Users
WHERE User_ID = ANY (SELECT User_ID FROM Tweet WHERE User_ID > 10)
GROUP BY DisplayName
```

View 3: A correlated nested query

```
SELECT AVG(Reply_Count)
FROM Filter, Tweet
WHERE Text_ID = Tweet.Text_ID
```

View 4: Uses a FULL JOIN

```
SELECT *
FROM Tweet
FULL OUTER JOIN Users
ON Tweet.Text_ID = Users.User_ID
```

View 5: Uses nested queries with any of the set operations UNION, EXCEPT, or INTERSECT

```
SELECT User_ID FROM Tweet
UNION
SELECT User_ID FROM Users
ORDER BY User_ID
```

View 6: Computes average retweets count

```
SELECT AVG (Retweet_Count)
FROM Filter, Tweet
WHERE Text_ID = Tweet.Text_ID
```

View 7: Computes highest reply count

```
SELECT COUNT (DISTINCT Reply_Count)
FROM Filter
```

View 8: Finds highest amount of tweets in a single day

```
SELECT COUNT (DISTINCT Text_ID)
FROM Tweet
GROUP BY DateCreated
```

View 9: Shows first tweet, and latest tweet

```
SELECT TOP 1 *
FROM Tweet
ORDER BY DateCreated DESC
```

```
SELECT TOP 1 *
FROM Tweet
ORDER BY DateCreated ASC
```

View 10: Count total tweets

```
SELECT COUNT (Text_ID)
From Tweet
```

Thoughts about future work

Possible future improvements include adding additional users and their tweets to the database (besides Trump), include additional user requested information fields, and expand on the types of information offered by implementing a photo/video storage solution. Another possible avenue of improvement may be to create customizable views where the user can select certain parts of the available data which will allow them to frame data in a specific way.

References

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