Vivekanand Education Society's Institute Of Technology
Department Of Computer Engineering

Final Project Review

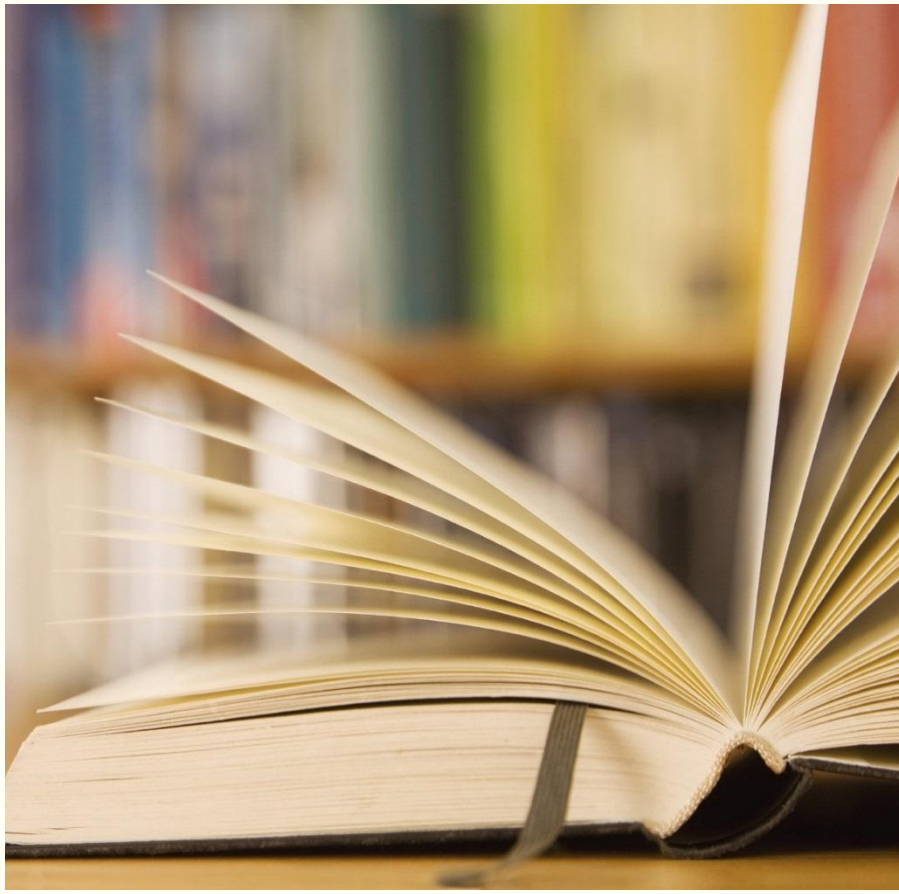
Cyberbullying and Fake Account Detection in Social Media

Group No - 48

Group Members:

1. Jayesh Samtani D17A-57
2. Sagar Sidhwa D17A-62
3. Somesh Tiwari D17A-71
4. Riya Wadhwani D17A-74

Mentor Details:
Name: Prof. Richard Joseph
Designation: Asst. Prof. VESIT



Index

Introduction

- Cyber Crime and Bullying have increased on Social Networking sites with having more than 50 Crores active users until now, so the misuse of the Online Social Platform had taken place in several times for e.g Bullying Someone by sending the harmful messages ,spreading of the harassment messages by using the fake accounts, using the abusive words on the social media etc

- In a recent report it was found that nearly 25% of People, especially teens and young adults are finding new ways to bully one another over the Internet and parents don't know that their child has been involved in a cyberbullying incident.

- A Preventive measure to STOP the above crimes caused a need for different Machine Learning algorithms for detection of the Cyber Crime and Bullying and the fake accounts so as to report these issues to the system immediately and to stop the crimes to increase in future and develop a secure online environment.

Lacuna In The Existing System

1] Lack of Security -There is a lack of Security in the existing systems but our system will deal with the proper security provision to the users.

2] No Transparency- As the existing system doesn’t provide the proper transparency in their system as they are not able to deal with the Sharing of their reports to the Cybercrime Department.

3] Costly to Produce Reports - The other systems will cost a lot to generate the reports but the system that we will develop will generate results and reports for free.

Problem Definition

Nowadays, cybercrime is one of the common issues everyone is facing and it is impacting the people, in which some are long period of sadness, anger, irritability, loss of interest in activities, being restless, anxious and worried, even in some cases they go into depression and take steps to scarify their life.It is unfortunate that there are no special Anti-Cyberbullying Laws in India yet.There are some common types of cyberbullying that is Flaming, Harassment, Denigration,Impersonation,Trickery. So to detect cyberbullying we have to make some software that will detect it and then report it to www.cybercrime.gov.in. Similarly, we will detect fake accounts.

Literature Survey

- **Title : Fake Twitter accounts: Profile characteristics obtained using an activity-based pattern detection approach**

  Link : https://people.clarkson.edu/~jmatthew/publications/SMS_gurajala_original.pdf

  Inference : From this paper we got the information about the fake account dataset quantity, because due to the low number of false positives of fake account data accuracy of model decreased even if the twitter profile database was approx 60 million.

- **Title : Detection of Behavior Patterns through Social Networks like Twitter, using Data Mining techniques as a method to detect Cyberbullying**

  Link:https://www.researchgate.net/publication/322514911_Towards_the_detection_of_cyberbullying_based_on_social_network_mining_techniques

  Inference : In the analysis stage we use data mining techniques to generate a dictionary of pejorative terms that are related to cyberbullying and thus be able to generate behavior patterns of these terms. And in this way provide better tools so that psychology specialists can optimize their work.

- **Title : Classification of Cyberbullying in Facebook Using Selenium and SVM**

  Link : https://www.researchgate.net/publication/327635426_Classification_of_Cyberbullying_in_Facebook_Using_Selenium_and_SVM

  Inference : In this paper facebook data were used for classification using Support Vector Machines (SVM) models. A total of 2263 data was used for training data, Facebook posts.

Hardware, Software Specifications

- Intel Pentium Processor
- RAM>=4GB
- Anaconda
- Visual Studio

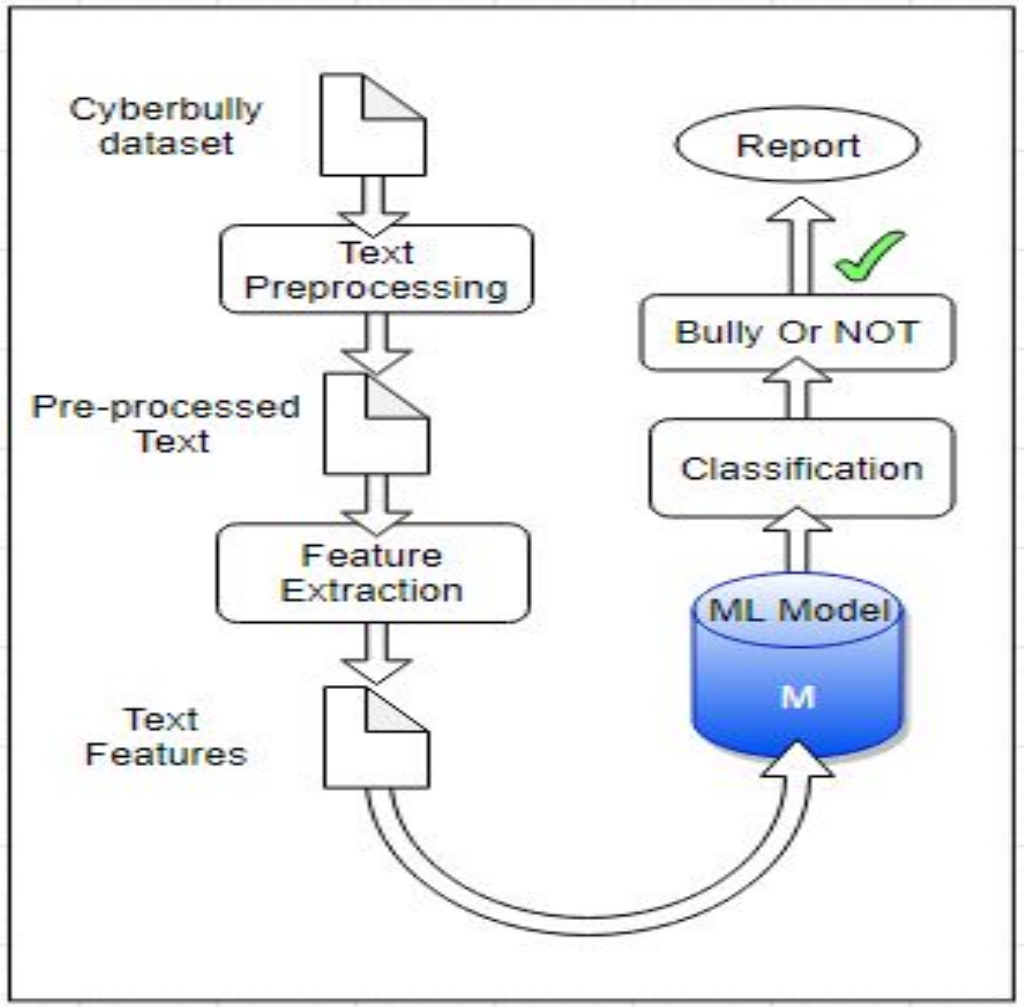
Tools

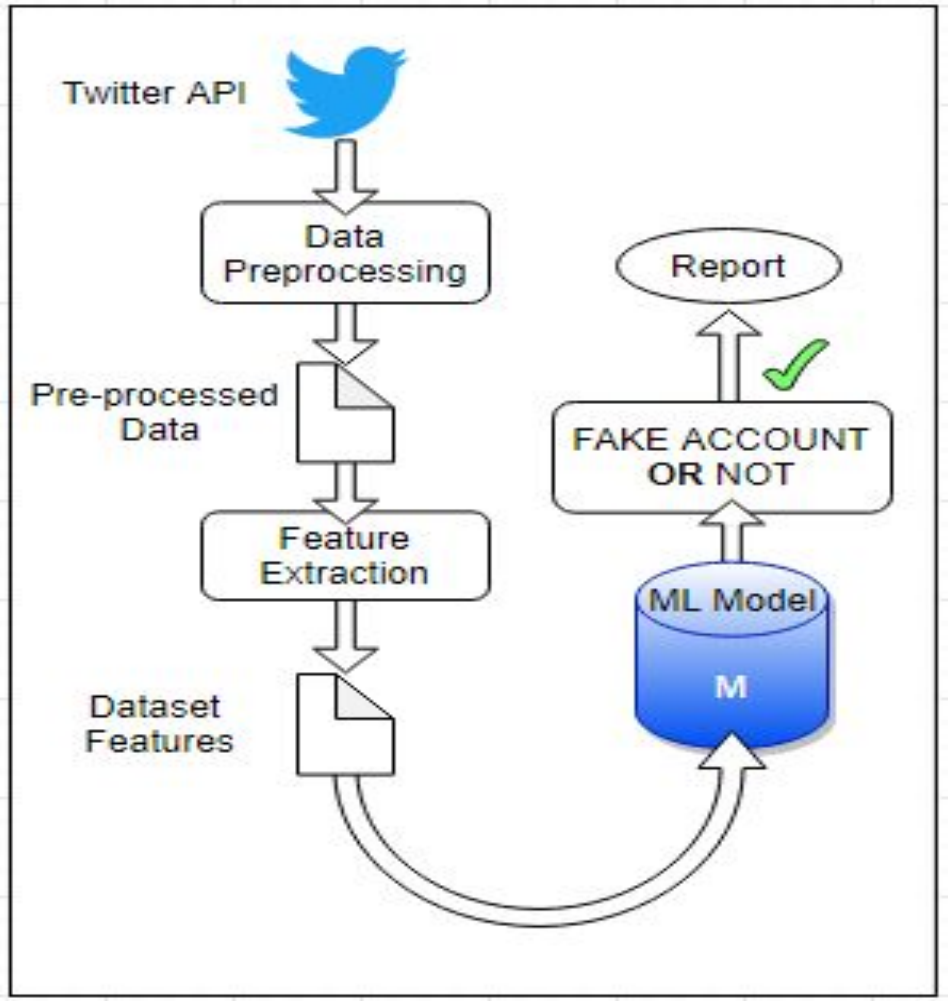
- Django
- Machine Learning Algorithms
- Python Libraries
- Windows 10 SDK

Constraints :

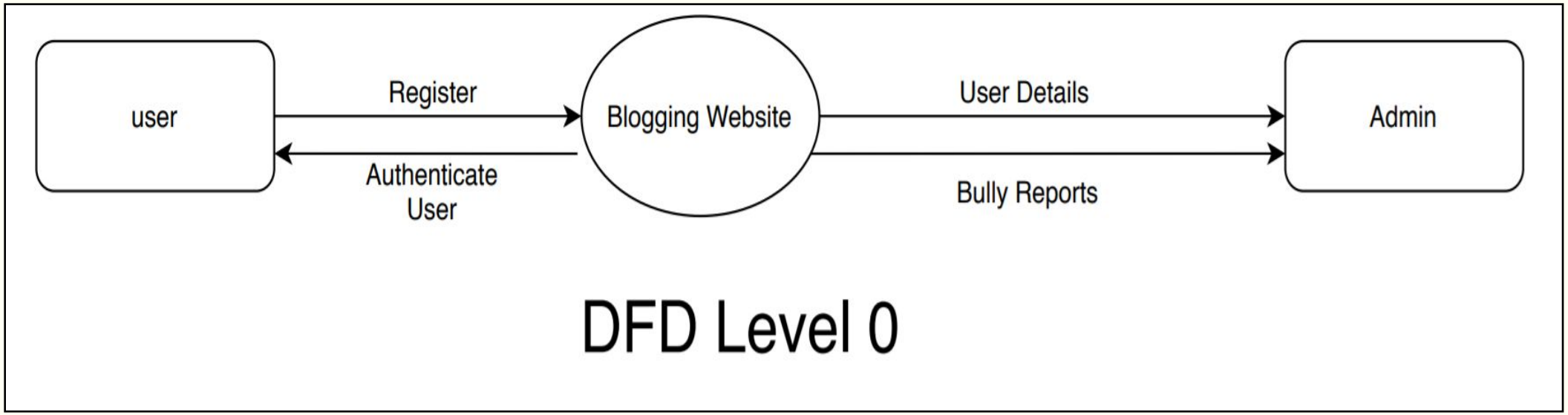
- Continuous network connectivity required
- Process or requirement varies according to the Dataset

Modular Diagram

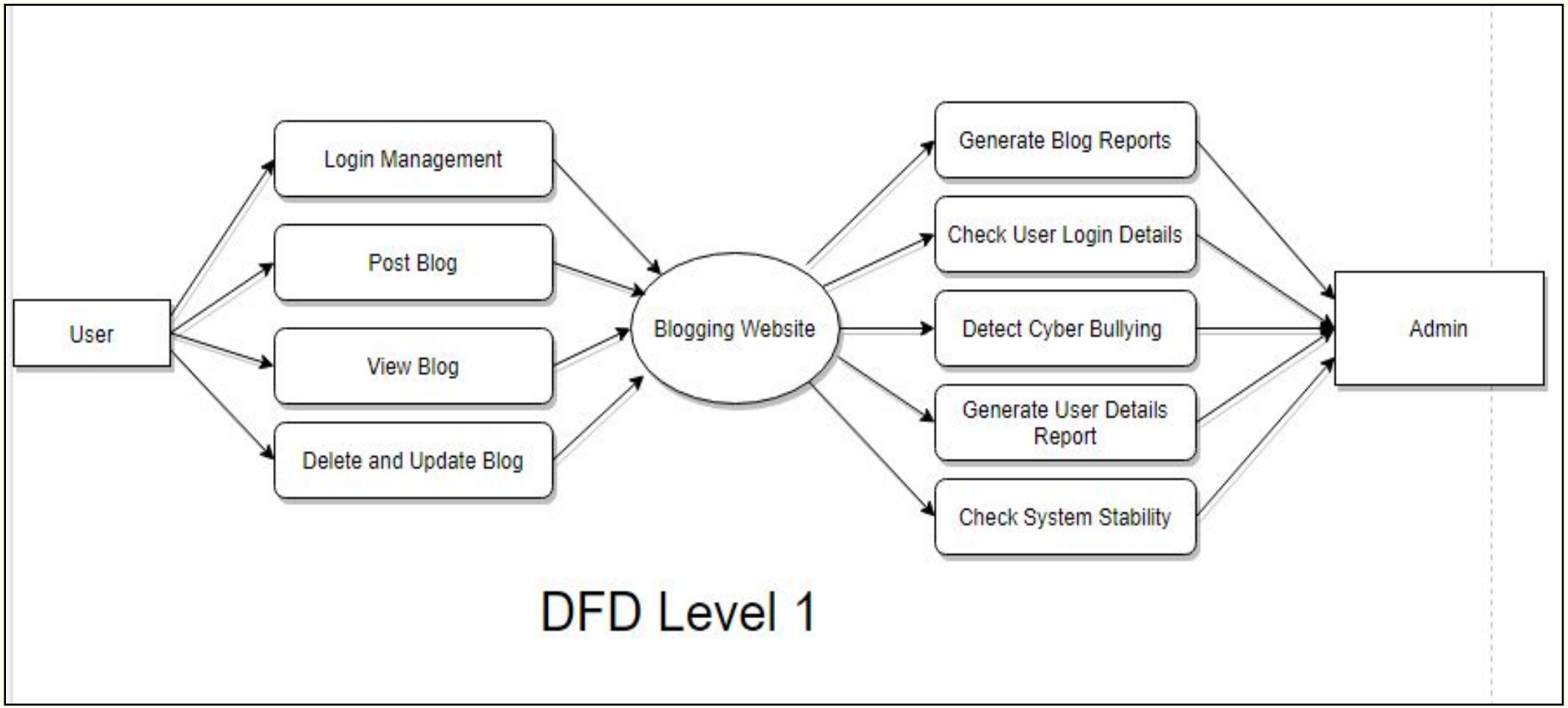




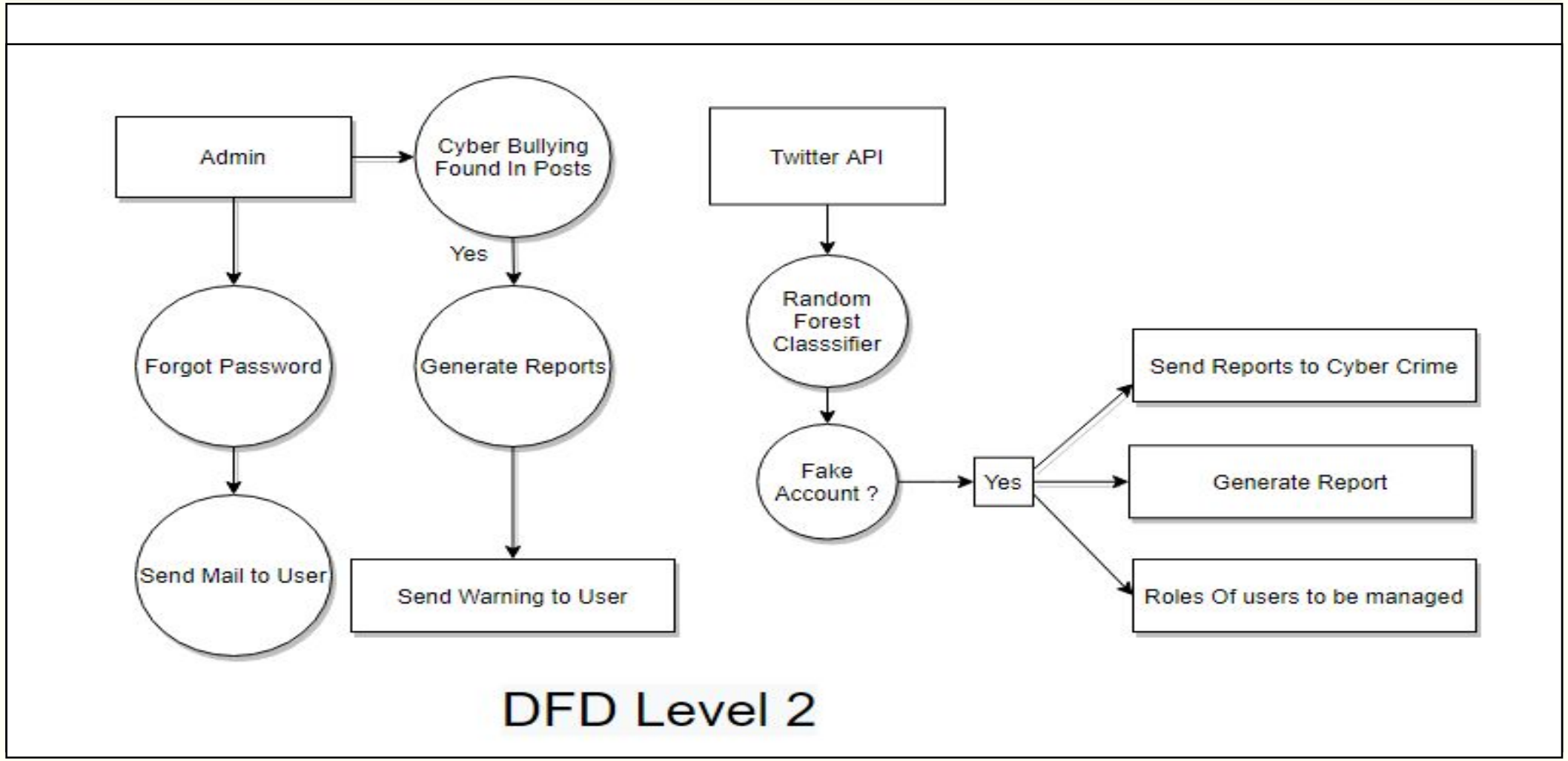
DFD Level 0


user
Register
Authenticate
User
Blogging Website
User Details
Bully Reports
Admin
DFD Level 0

DFD Level 1


User
Login Management
Post Blog
View Blog
Delete and Update Blog
Blogging Website
Generate Blog Reports
Check User Login Details
Detect Cyber Bullying
Generate User Details Report
Check System Stability
Admin
DFD Level 1

DFD Level 2


Admin
Cyber Bullying Found In Posts
Yes
Forgot Password
Generate Reports
Send Mail to User
Send Warning to User
Twitter API
Random Forest Classsifier
Fake Account ?
Yes
Send Reports to Cyber Crime
Generate Report
Roles Of users to be managed
DFD Level 2

Methodology Employed

The proposed approach contains three main steps namely Preprocessing, features extraction and classification step.

In the preprocessing step from the Toxic dataset we had used the **parameters - Toxic , Sever Toxic,Obscene,Insult,Threat,Identity hate** and from the fake account dataset the parameters used are - Name, Status Count, Followers Count, Friends Count ,Url, Time Zone, Listed Count ,Screen Name ,Profile Bio,Location .

we clean the data by removing the noise and unnecessary text.

The preprocessing step is done in the following: -

Tokenization

Lowering text

Stop words and encoding cleaning

The second step of the proposed Model is the features extraction step. In this step the textual data is transformed into a suitable format applicable to feed into machine learning algorithms

Methodology Employed

The last step in the proposed approach is the classification step where the extracted features are fed into a classification algorithm to train, and test the classifier and hence use it in the prediction phase. We will use classifiers, namely, SVM (Support Vector Machine), Naive Bayes,Random Forest,Decision Tree , Logistic Regression.

Accuracy of different algorithms will be Compared to get the best possible result.
If offensive text is Found in the Post the details of users such as IP address,latitude ,longitude,ISP will be stored.
For the fake profile detection the detection process starts with the selection of the profile that needs to be tested. After selection of the profile the suitable attributes ie., features are selected on which the classification algorithm is being implemented ,the attributes extracted are passed to the trained classifier.

Algorithms Implemented

- **Random Forest**

Random forest, like its name implies, consists of a large number of individual decision trees that operate as an ensemble. Each individual tree in the random forest spits out a class prediction and the class with the most votes becomes our model's prediction

There are two stages in Random Forest algorithm, one is random forest creation, the other is to make a prediction from the random forest classifier created in the first stage. The whole process is shown below, and it's easy to understand using the figure.

Here the author firstly shows the Random Forest creation pseudocode:

1. Randomly select "**K**" features from total "**m**" features where **k << m**
2. Among the "**K**" features, calculate the node "**d**" using the best split point
3. Split the node into **daughter nodes** using the **best split**
4. Repeat the **a to c** steps until "l" number of nodes has been reached
5. Build forest by repeating steps **a to d** for "n" number times to create **"n" number of trees**

Implementation Details

//Dataset Used for Cyberbullying (Total Rows : 159571)

	id	comment_text	toxic	severe_toxic	obscene	threat	insult	identity_hate
0	0000997932d777bf	Explanation\nWhy the edits made under my usern...	0	0	0	0	0	0
1	000103f0d9cfb60f	D'aww! He matches this background colour I'm s...	0	0	0	0	0	0
2	000113f07ec002fd	Hey man, I'm really not trying to edit war. It...	0	0	0	0	0	0
3	0001b41b1c6bb37e	"\nMore\nI can't make any real suggestions on ...	0	0	0	0	0	0
4	0001d958c54c6e35	You, sir, are my hero. Any chance you remember...	0	0	0	0	0	0

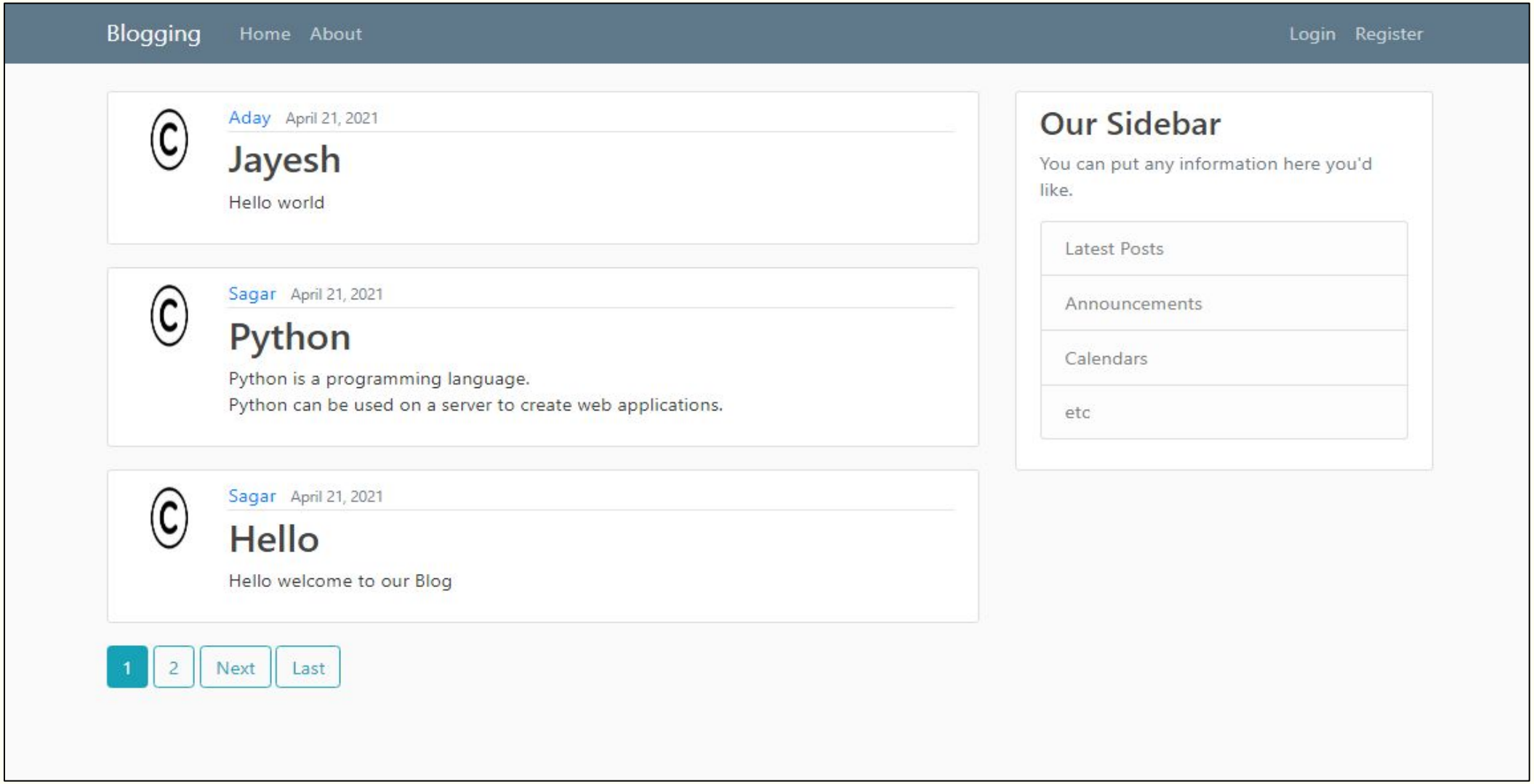
Implementation Details

//Dataset Used for Fake Account (Total Rows : 3000)

id	name	screen_na	statuses_(	followers_	friends_c(	favourites	listed_cou	created_a	url	lang	time_zon(	location	default_p	default_p	geo_enab
3.7E+08	pirfectmo	pirfectmo	24	4	588	16	0	Thu Sep 08 13:20:35 -		en					
37384589	SAK Nair	bsknair19(	656	57	693	597	0	Sun May 03 07:35:13		en		Kuwait	1		
72110028	Deepak	dedjven	1234	15	104	1150	0	Sun Sep 06 19:50:08 -		en	Internatio	India			1
82885728	Marcos Vi	BrowAlve	573	14	227	530	0	Fri Oct 16 14:02:48 +(		en		Rio de Janeiro			
1.1E+08	Shri Kant I	kanaujiasl	675	18	519	653	0	Sun Jan 31 12:08:41 +		en	New Delh	lucknow	1	1	
1.34E+08	Shree visl	shreeswa	1333	73	1998	1262	1	Sun Apr 18 12:04:04 +		en	Chennai				1
1.96E+08	crystyane	crystyane:	99	26	1548	80	0	Mon Sep 27 21:53:12		es	Hawaii		1	1	
2.53E+08	shashank	creativebu	553	63	1930	497	0	Tue Feb 15 16:34:46 -		en	Hawaii	Pune	1	1	
2.9E+08	santosh n	santoshna	1576	8	501	1402	1	Sat Apr 30 11:24:34 +		en		Ranai			
3.04E+08	DATTARAI	DATTARAI	1378	48	1998	1108	0	Mon May 23 17:15:15		en	Chennai		1		
3.49E+08	suraj jadh	surajjadha	1444	35	390	1283	0	Sat Aug 06 01:23:19 +		en		amravati ,maharatra ,india			
4.76E+08	Nirmal	smartnirm	1351	7	328	1273	1	Fri Jan 27 11:24:28 +0		en			1	1	
6.16E+08	Rochell Ca	rochellcar	43	17	641	0	0	Sat Jun 23 15:30:29 +(		en		DIADEMA,	1		
6.16E+08	Thomaser	thomasen	50	20	630	0	0	Sat Jun 23 15:31:34 +(		en		In your ho	1		
6.16E+08	Arnetta W	whitfieldh	68	22	602	0	0	Sat Jun 23 15:31:45 +(		en		Arizona	1		
6.16E+08	Tonia Jacc	toniajacob	60	14	592	0	0	Sat Jun 23 15:32:21 +(		en		ÐÑ‡Ð¸Ð½	1		
6.16E+08	Kasandra I	kasandrap	52	27	620	0	0	Sat Jun 23 15:32:47 +(		en		Rio Grand	1		
6.16E+08	Stefania S	searsfo	67	32	639	0	0	Sat Jun 23 15:32:53 +(		en		queens, n	1		

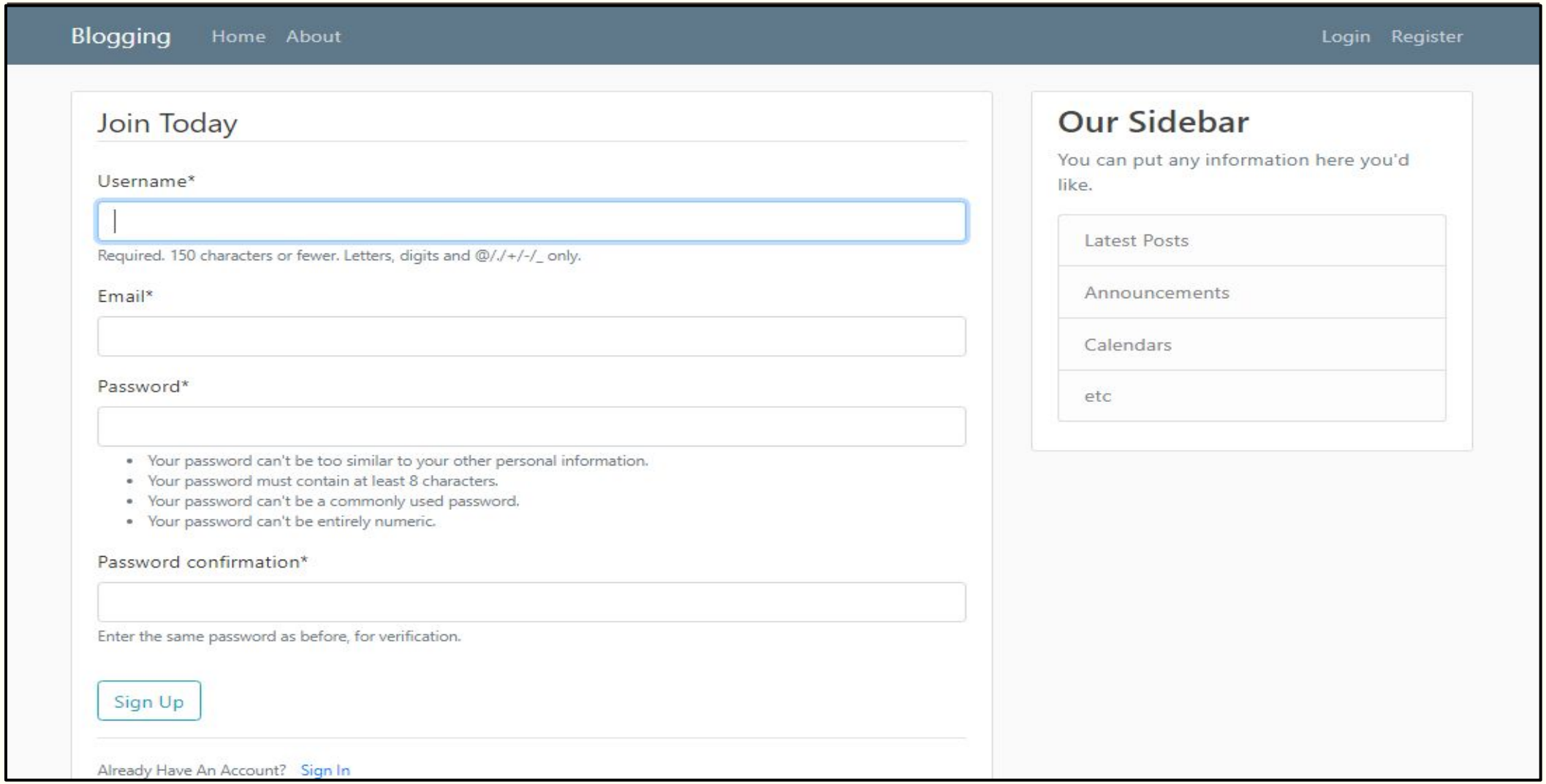
Implementation Details

//GUI Screenshots (Home Page)



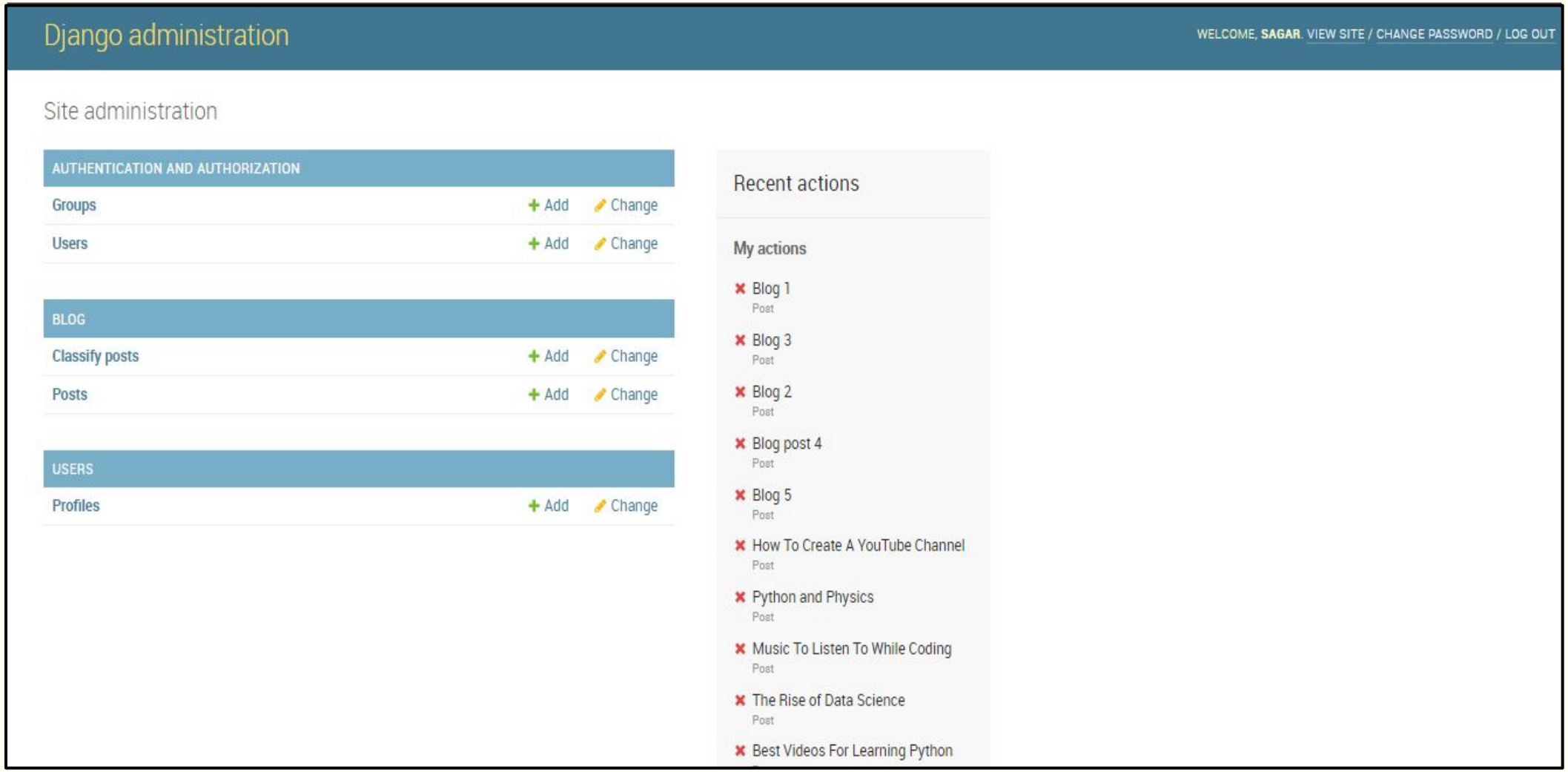
Implementation Details

//GUI Screenshots (Register page)



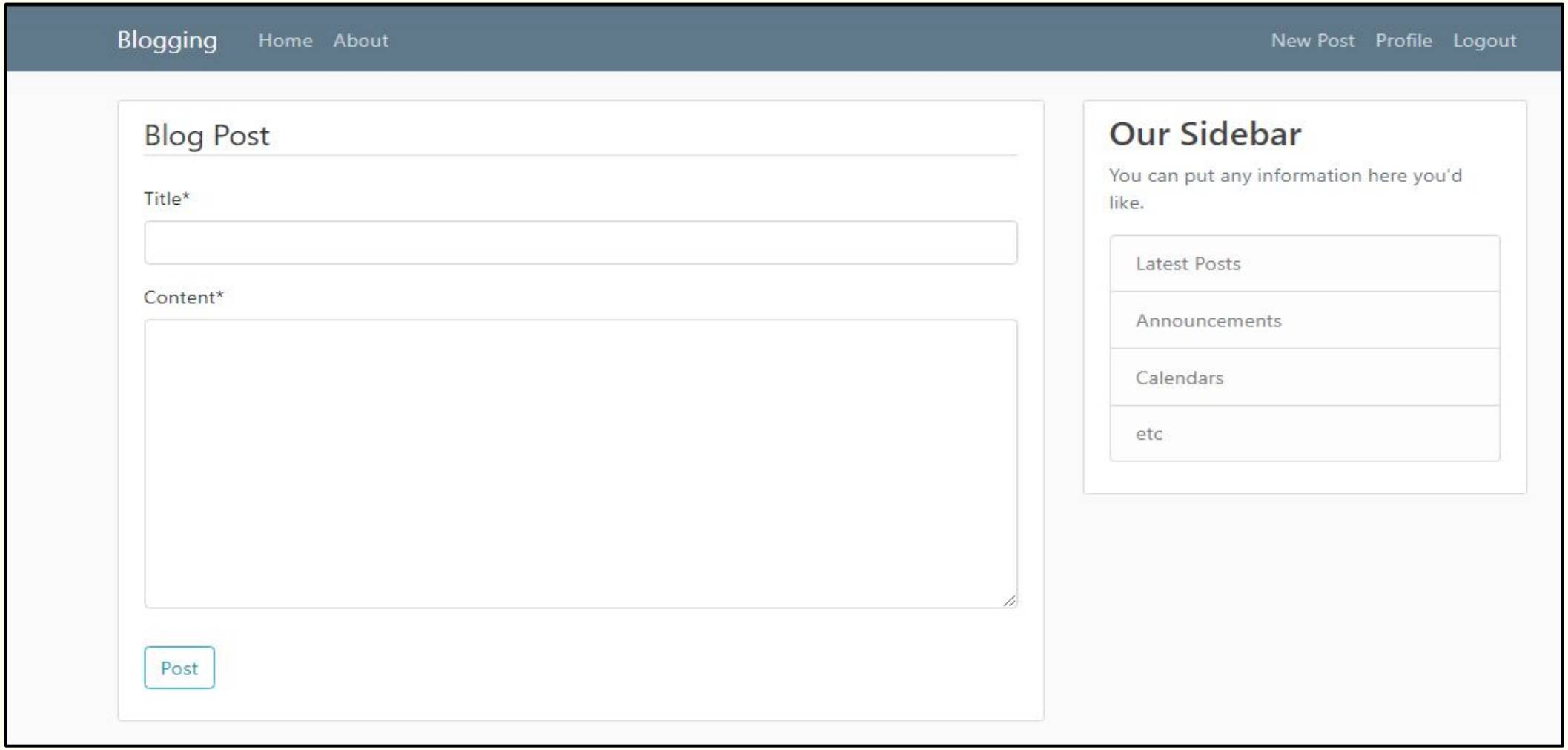
Implementation Details

//GUI Screenshots (Admin Page)



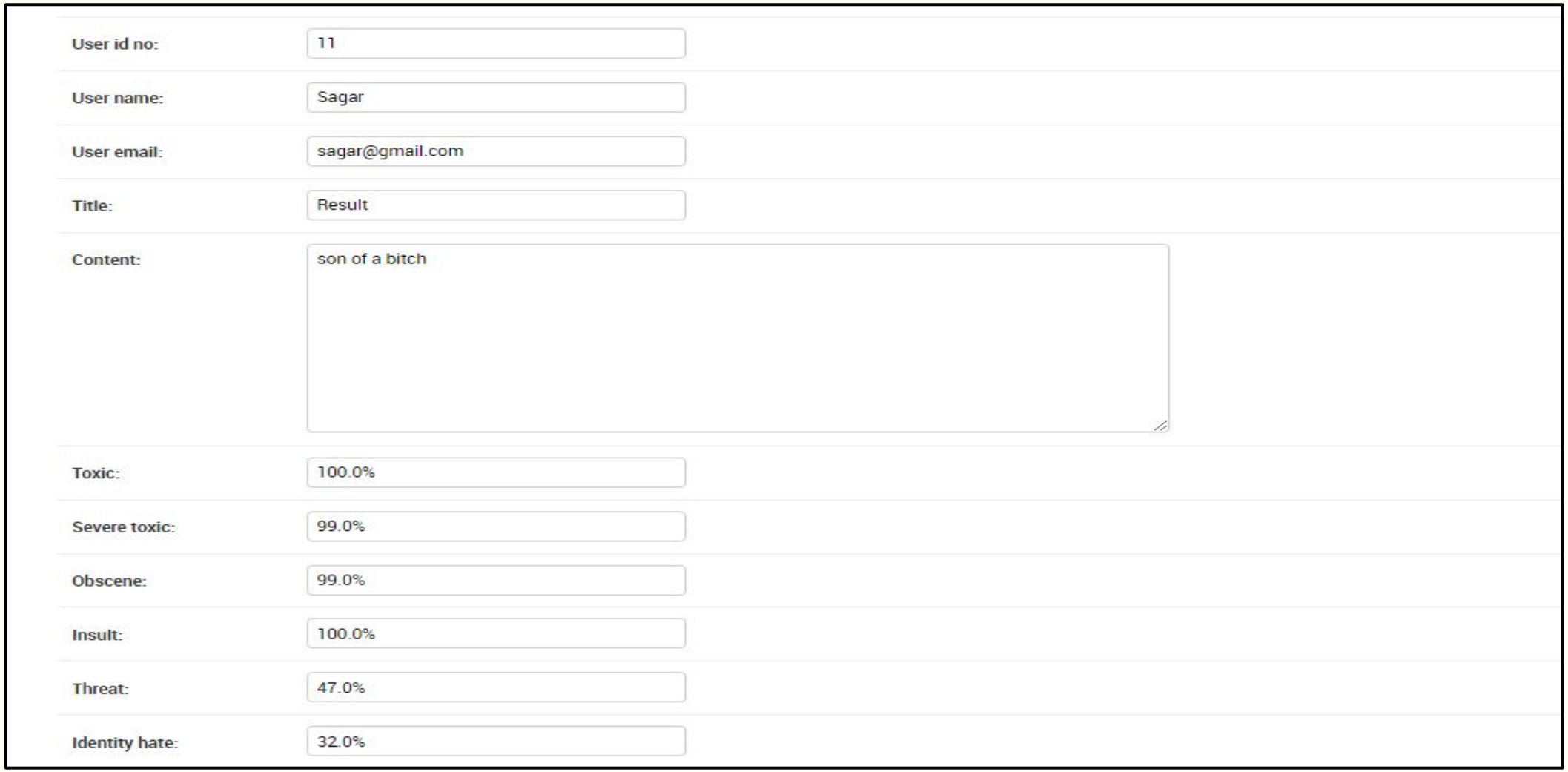
Implementation Details

//GUI Screenshots (New Post Page)



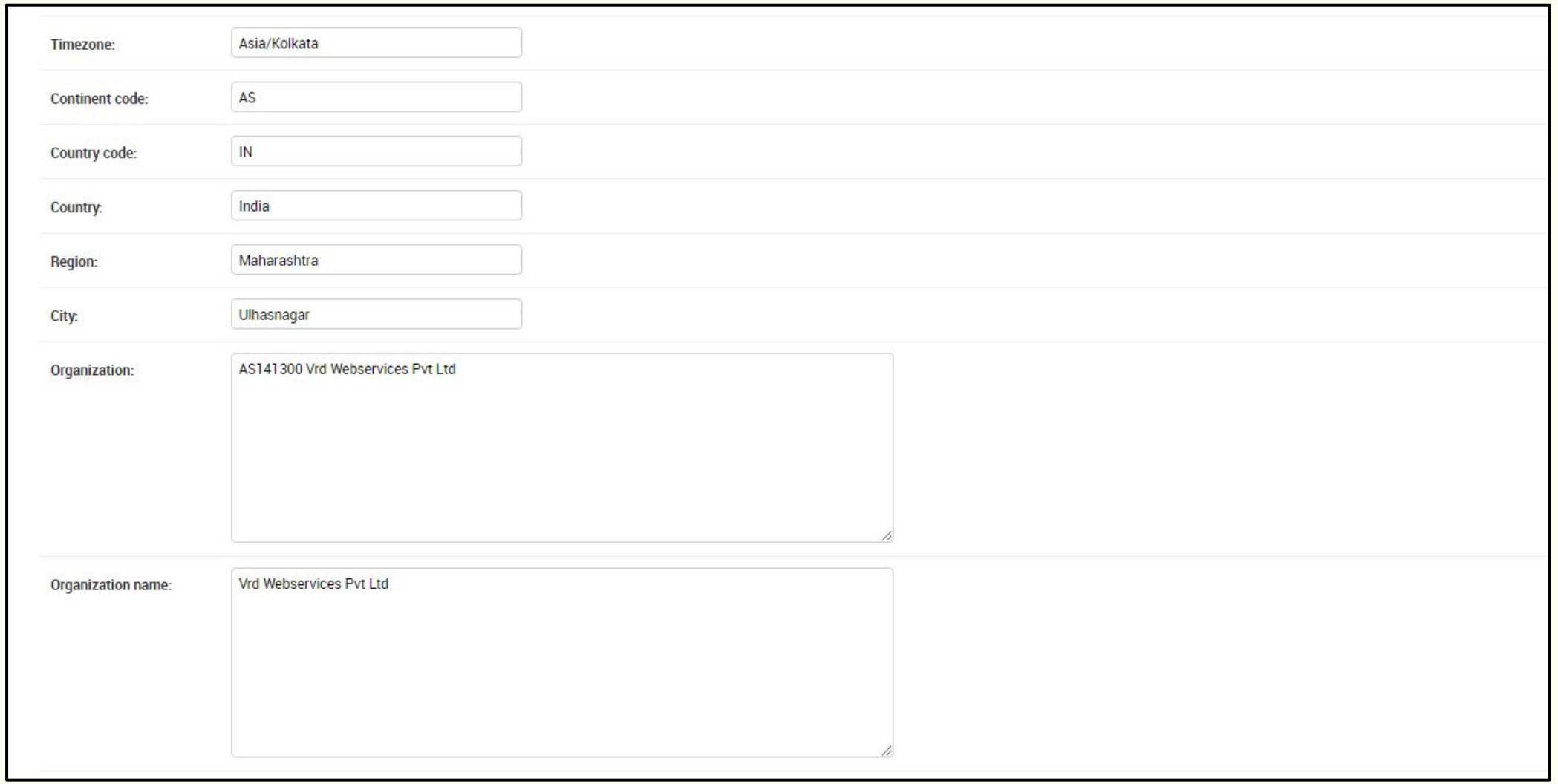
Results Obtained (Screen Shots)

//For Cyberbullying



Results Obtained (Screen Shots)

//For Cyberbullying



Results Obtained (Screen Shots)

//For Fake Account

```
[41] df.head(3)
```

	user	listed_count	followers_count	favorite_count	statuses_count	friends_count
0	TDataScience	1281	75385	60	20993	1722
1	sidhuwrites	113	78729	44	59410	2214
2	NVIDIAHPCDev	1107	52163	72	7408	734

```
[19] # RANDOM FOREST

     rf_classifier = RandomForestClassifier(n_estimators=100, max_depth=2, random_state=0)
     rf_classifier.fit(X_train, y_train)
     train_predictions = rf_classifier.predict(X_train)
     prediction = rf_classifier.predict(X_test)
```

```
[42] j=rf_classifier.predict([[20993,75385,1722,60,1281,2,0]])
     #statuses_count', 'followers_count', 'friends_count','favourites_count', 'listed_count', 'sex_code', 'lan
```

```
print(j)
```

```
[0]
```

Conclusion

- In this project, we proposed an approach to detect Cyberbullying and comment classification as toxic,obscene,threat,insult,identity hate and Fake Account Detection using machine learning techniques.

- We have evaluated our model on Different ML Algorithms and we have also used Countvectorizer for features extraction By using machine learning algorithms to its full extent.

- We will eliminate the need for manual prediction of a fake account, which needs a lot of human resources and is also a time-consuming process.

Future Scope

- **To reduce the toxicity classification on the Double negative sentence**

  (For e.g “I don't have nobody to kill my time”)

- **If a post contains a normal text and a web page link ,our system will identify the web link as the simple text and will calculate the percentage of all the categories so we can use a web crawling method to scrap the text from the web page and calculate the percentage of all the categories.**

References

- S. Gurajala, J. S. White, B. Hudson, and J. N. Matthews, “Fake Twitter accounts: Profile characteristics obtained using an activity-based pattern detection approach,” in Proceedings of the 2015 International Conference on Social Media & Society , Toronto, Ontario, Canada, 2015.View at: Publisher Site | Google Scholar.

- N. V. Chawla, K. W. Bowyer, L. O. Hall, and W. P. Kegelmeyer, “SMOTE: synthetic minority over-sampling technique,” Journal of Artificial Intelligence Research, vol. 16, pp. 321–357, 2002.View at: Google Scholar

- I. Jolliffe, Principal Component Analysis, 2002.View at: MathSciNet.

- S. Sperandei, “Understanding logistic regression analysis,” Biochemia Medica, vol. 24, no. 1, pp. 12–18, 2014.View at: Publisher Site | Google Scholar..

Review Sheet 1

Inhouse/ Industry:

Group No.:

Class: D17 A/B/C

Group No.:48

Project Evaluation Sheet 2020 - 21

Title of Project: **Cyberbullying and fake profile detection in Social Media**

Group Members: **Jayesh Samtani (57) D17A ,Sagar Sidhwa (62) D17A, Somesh Tiwari (71) D17A, Riya Wadhwani(74) D17A**

Engineering Concepts & Knowledge	Interpretation of Problem & Analysis	Design / Prototype	Interpretation of Data & Dataset	Modern Tool Usage	Societal Benefit, Safety Consideration	Environment Friendly	Ethics	Team work	Presentation Skills	Applied Engg &Mgmt principles	Life - long learning	Professional Skills	Innovative Approach	Research Paper	Total Marks
(5)	(5)	(5)	(3)	(5)	(2)	(2)	(2)	(2)	(2)	(3)	(3)	(3)	(3)	(5)	(50)
4	4	4	2	3	2	2	2	2	2	2	3	2	2	4	40

Lifna C S (Reviewer1)

Engineering Concepts & Knowledge	Interpretation of Problem & Analysis	Design / Prototype	Interpretation of Data & Dataset	Modern Tool Usage	Societal Benefit, Safety Consideration	Environment Friendly	Ethics	Team work	Presentation Skills	Applied Engg &Mgmt principles	Life - long learning	Professional Skills	Innovative Approach	Research Paper	Total Marks
(5)	(5)	(5)	(3)	(5)	(2)	(2)	(2)	(2)	(2)	(3)	(3)	(3)	(3)	(5)	(50)
3	3	3	2	3	2	2	2	2	2	2	2	2	1	3	34

Date: **2nd March,2021**

Richard Joseph (Reviewer2)

- **Twitter API**
- **LSTM not implemented**
- **Fake Account Detection Remaining**
- **Revise the paper to incorporate the integration of these modules**

Review Sheet 2

Inhouse/ Industry:

Group No.:

Class: D17 A/B/C

Group No.: 48

Project Evaluation Sheet 2020 - 21

Title of Project: **Cyberbullying and fake account detection in social media**

Group Members: **Jayesh Samtani D17A-57, Sagar Sidhwa D17A-62, Somesh Tiwari D17A-71, Riya Wadhwani D17A-74**

Engineering Concepts & Knowledge	Interpretation of Problem & Analysis	Design / Prototype	Interpretation of Data & Dataset	Modern Tool Usage	Societal Benefit, Safety Consideration	Environment Friendly	Ethics	Team work	Presentation Skills	Applied Engg &Mgmt principles	Life - long learning	Professional Skills	Innovative Approach	**Research Paper**	**Total Marks**
(5)	(5)	(5)	(3)	(5)	(2)	(2)	(2)	(2)	(2)	(3)	(3)	(3)	(3)	(5)	**(50)**
4	4	5	3	4	2	2	2	2	2	3	3	2	2	4	**44**

Lifna C S (Reviewer-1)

Engineering Concepts & Knowledge	Interpretation of Problem & Analysis	Design / Prototype	Interpretation of Data & Dataset	Modern Tool Usage	Societal Benefit, Safety Consideration	Environment Friendly	Ethics	Team work	Presentation Skills	Applied Engg &Mgmt principles	Life - long learning	Professional Skills	Innovative Approach	**Research Paper**	**Total Marks**
(5)	(5)	(5)	(3)	(5)	(2)	(2)	(2)	(2)	(2)	(3)	(3)	(3)	(3)	(5)	**(50)**
4	4	4	3	4	2	2	2	2	2	3	3	2	2	3	**42**

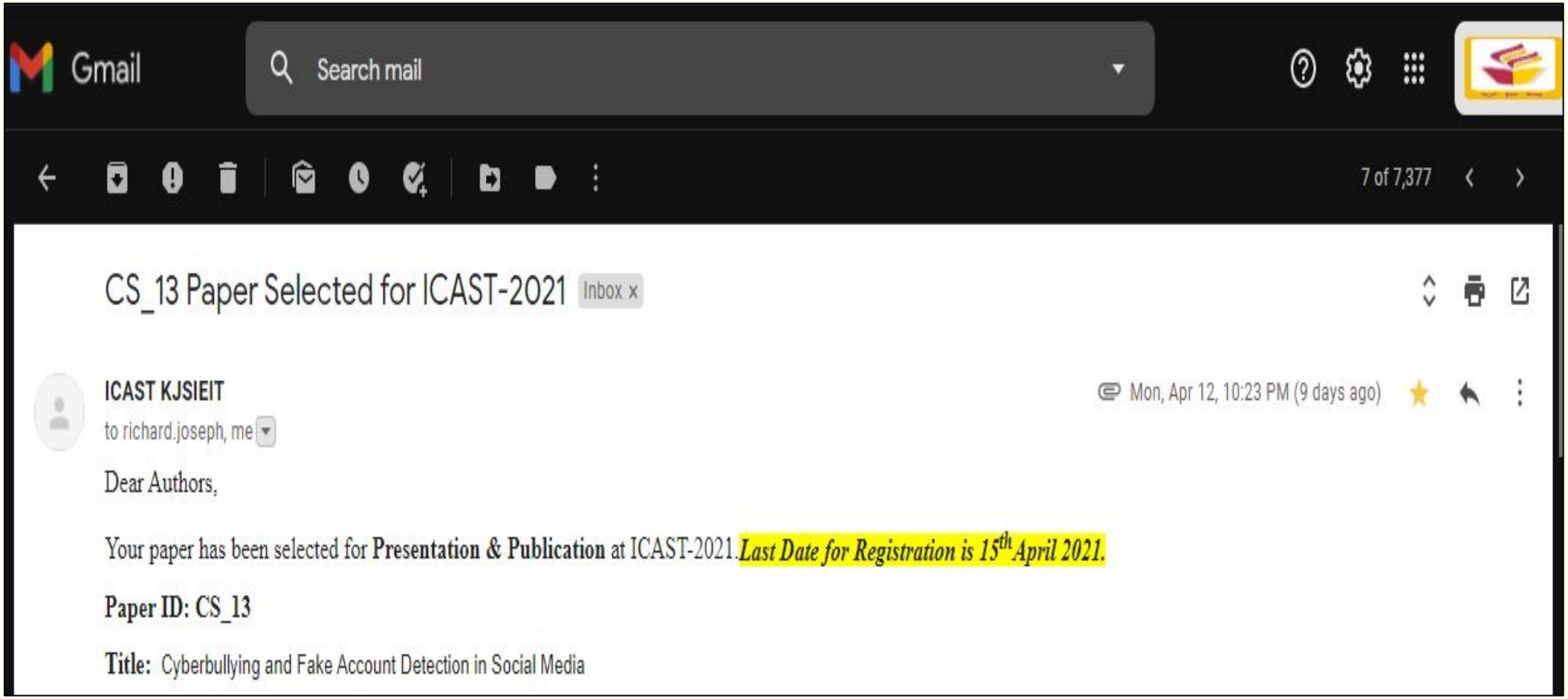
Date: **26th April, 2021**

Richard Joseph (Reviewer-2)

Comments :

1. **Consider writing the second paper with Tweets as the input for classification.**
2. **Include a separate class if the tweet / text belongs to any of the 6 classes discussed in the Review.**
3. **Also, can try exploring the tinyURLs which are present in the tweets as an Extension of the project while considering for the second paper.**

Details Of Paper Published



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Vice-Principal

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THANK YOU