The background of the slide features a complex, abstract pattern resembling marbled paper or liquid crystal. It consists of dark green, black, and purple colors with intricate, wavy, and swirling textures.

SEXUAL HARASSMENT CLASSIFICATION USING MACHINE LEARNING

PRESENTED BY:

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INTRODUCTION

- Sexual harassment is one of the biggest problems, it refers to unwelcome sexual advances, comments of a sexual nature, requests for sexual favors, and harassment or comments about an individual's gender, all of which create a hostile work environment.
- Here our objective is to automatically categorize each story submitted by a user. We will consider the user stories as our training data. We will try to build a Machine Learning model which will take these stories/descriptions as input and try to predict the categories of harassment.



MOTIVATION

- In previous decades opening up about your bad experiences, was considered as taboo, but in today's era Following the #MeToo movement we had a lot of people opening up about their sexual harassment incidents, but as with any internet viral movement, it faded with time. However, this plethora of information can be used effectively to automatically classify abuse incidents into appropriate categories, and this article would help us understand how we can reduce the incidences of Sexual Harassment using Machine Learning.

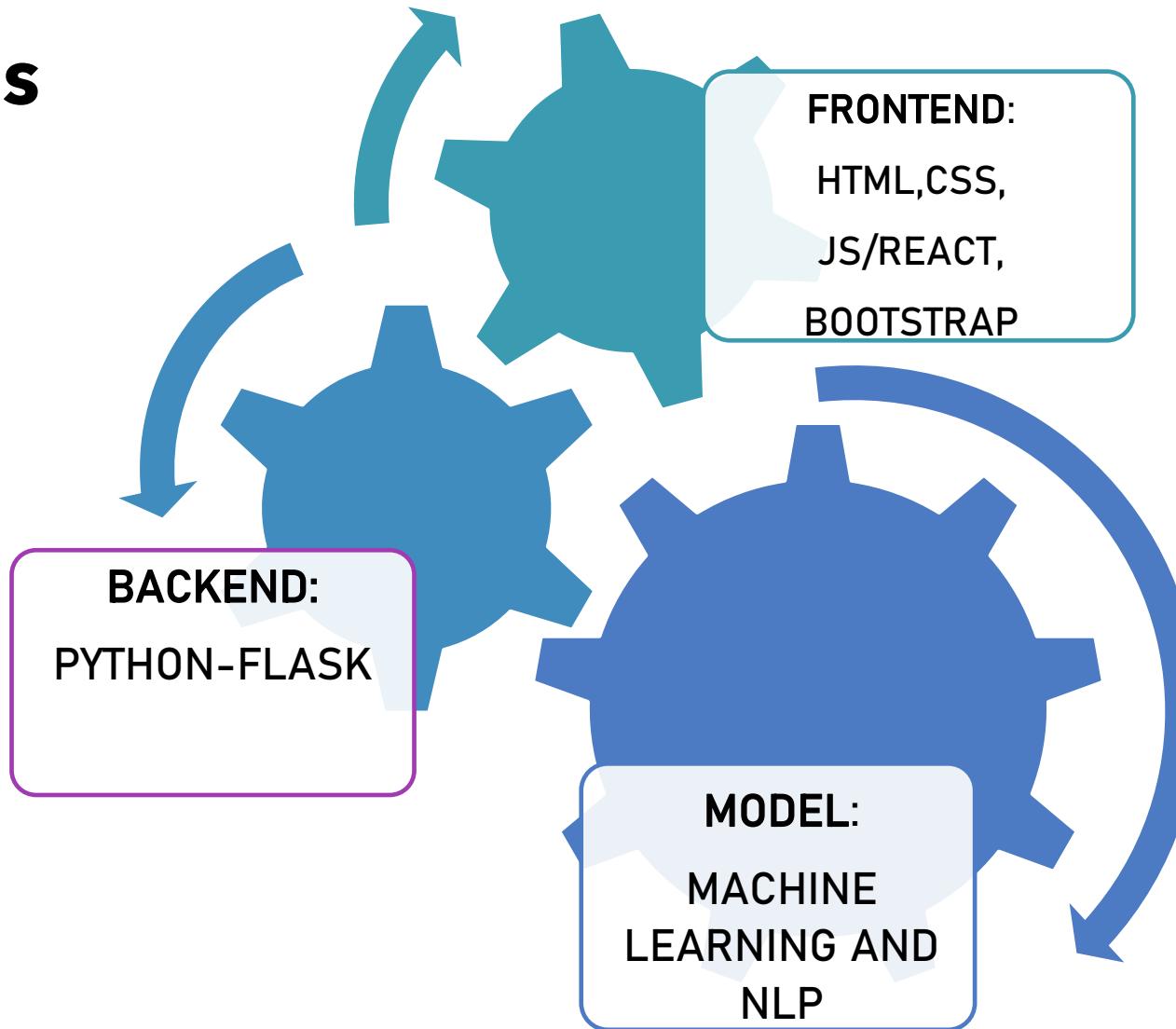


MACHINE LEARNING AND NLP: STATE-OF-ART



- Automatic classification of the type of sexual harassment will enable people who want to make a change in society to better analyze the data, and it is for this very reason that identifying Sexual Harassment using Machine Learning would prove to be a game changer and ensure no such unforeseen incidences take place.
- As we already have many personal stories about sexual abuse shared online through this case study we would make scientific use of the data.
- We would leverage NLP to correctly classify types of Sexual Harassment using Machine Learning. Single and multi-label classification is used for the task to help fill online incident reports automatically and classify, and summarize the data based on the type of abuse.

Tools and Technologies



PROJECT OUTLINE

DATASET ANALYSIS AND EDA OF DATA

**PREPROCESSING AND EMBEDDING OF THE TEXT
USING NLP**

MODEL GENERATION

PERFORMANCE MATRICES

MODEL DEPLOYMENT AND APPLICATION

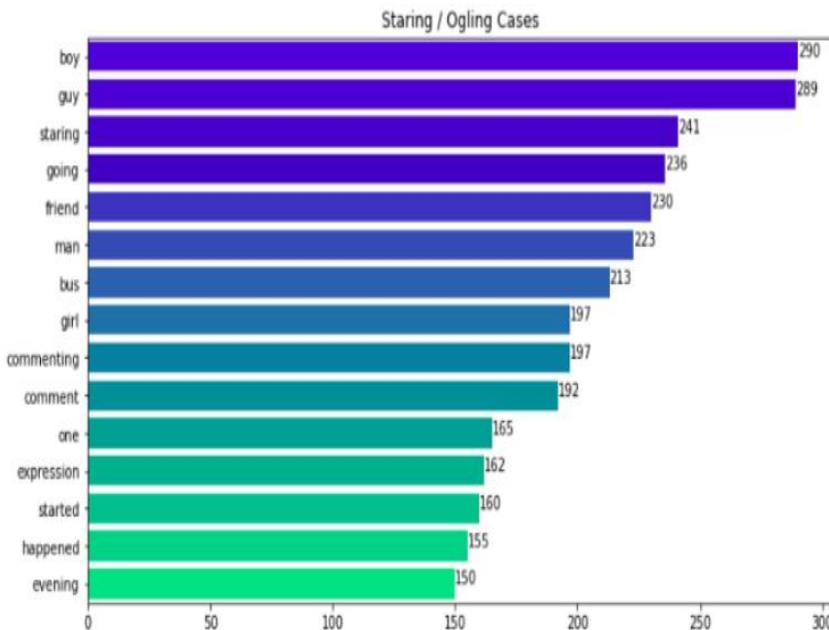


DEVELOPMENT WORK AND TIMELINE



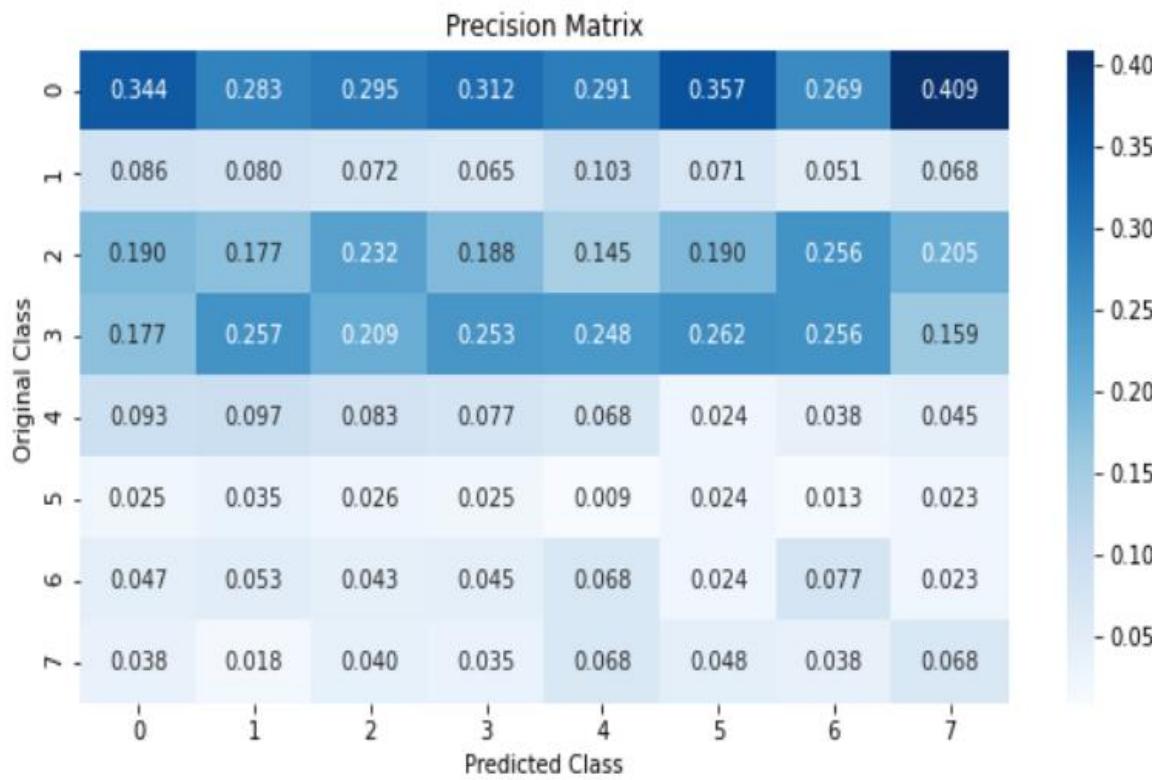
STAGE-1

Frequent words and Wordcloud for Commenting Cases



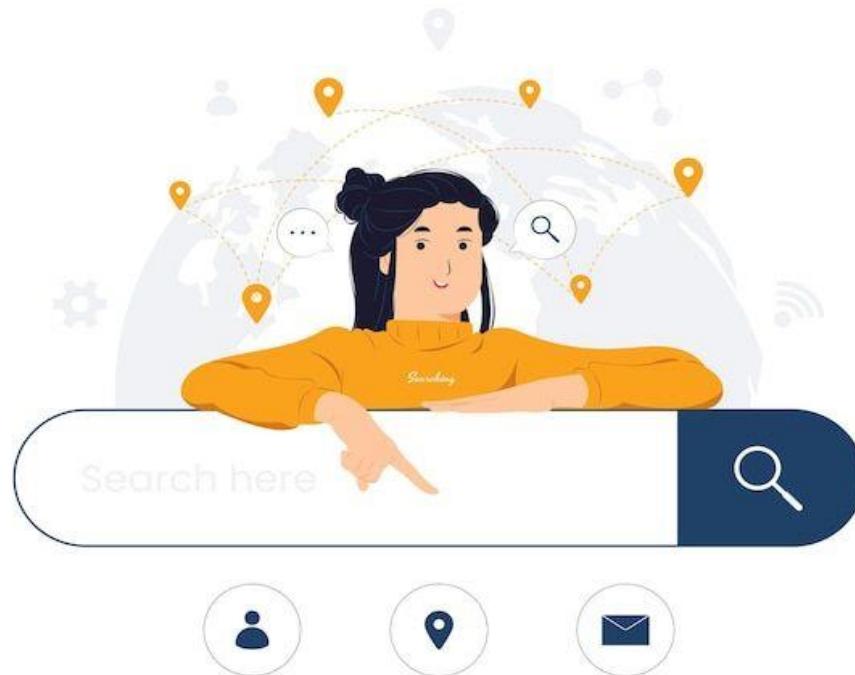
- In the first phase of our project, we are going to preprocess textual data using NLP and going to find some patterns in the data.
 - Exploratory data analysis of data and visualization using different graphs and charts.

STAGE-2



- In the second phase we are going to develop a machine-learning model for classification, we are going to implement some core models with the estimation of accuracy.
- For the evaluation of our models, we are going to develop some performance matrices.

STAGE-3



- In the third phase, we are going to deploy our machine learning model in binary pickle format.
- We are going to integrate this deployed model into real-time applications using the flask framework.

Data Set Analysis

Data has been collected from [Safecity](#), which collects anonymous reports of crimes in public spaces. The top three most dense categories groping/touching, staring/ogling, and commenting, to use as our dataset out of a total of 13 different categories, as the others were more sparse. Each description may fall into none, some, or all of the categories. Data provided to us already have split for train test and validation sets, we have used the same combination of splits for our models.

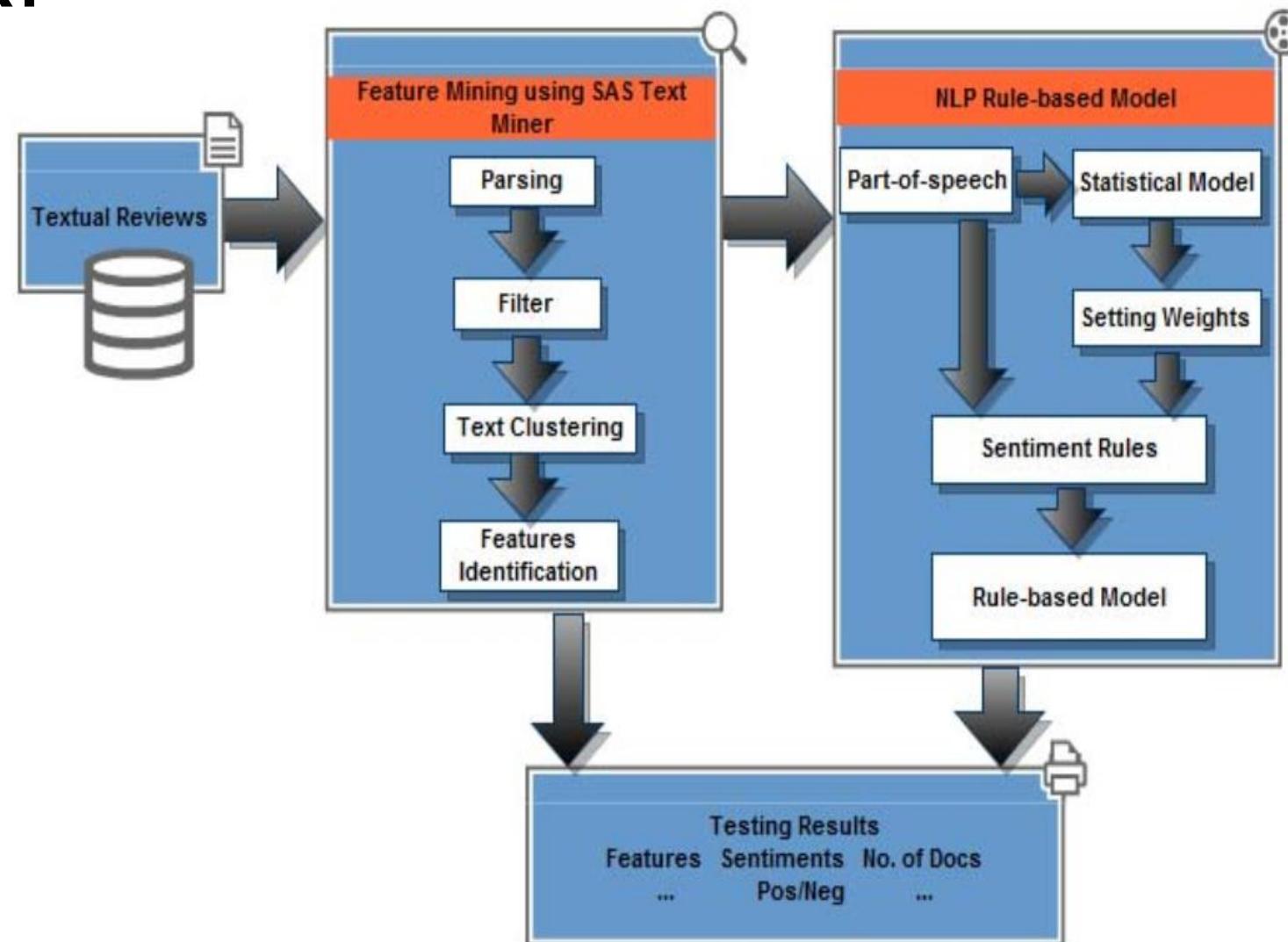
The training dataset has two columns

For single-label classification:-

1. Description of the incident:- We have data present in the English language.
2. Category:- Binary variable 1 indicating harassment 0 indicating none



FLOW-CHART

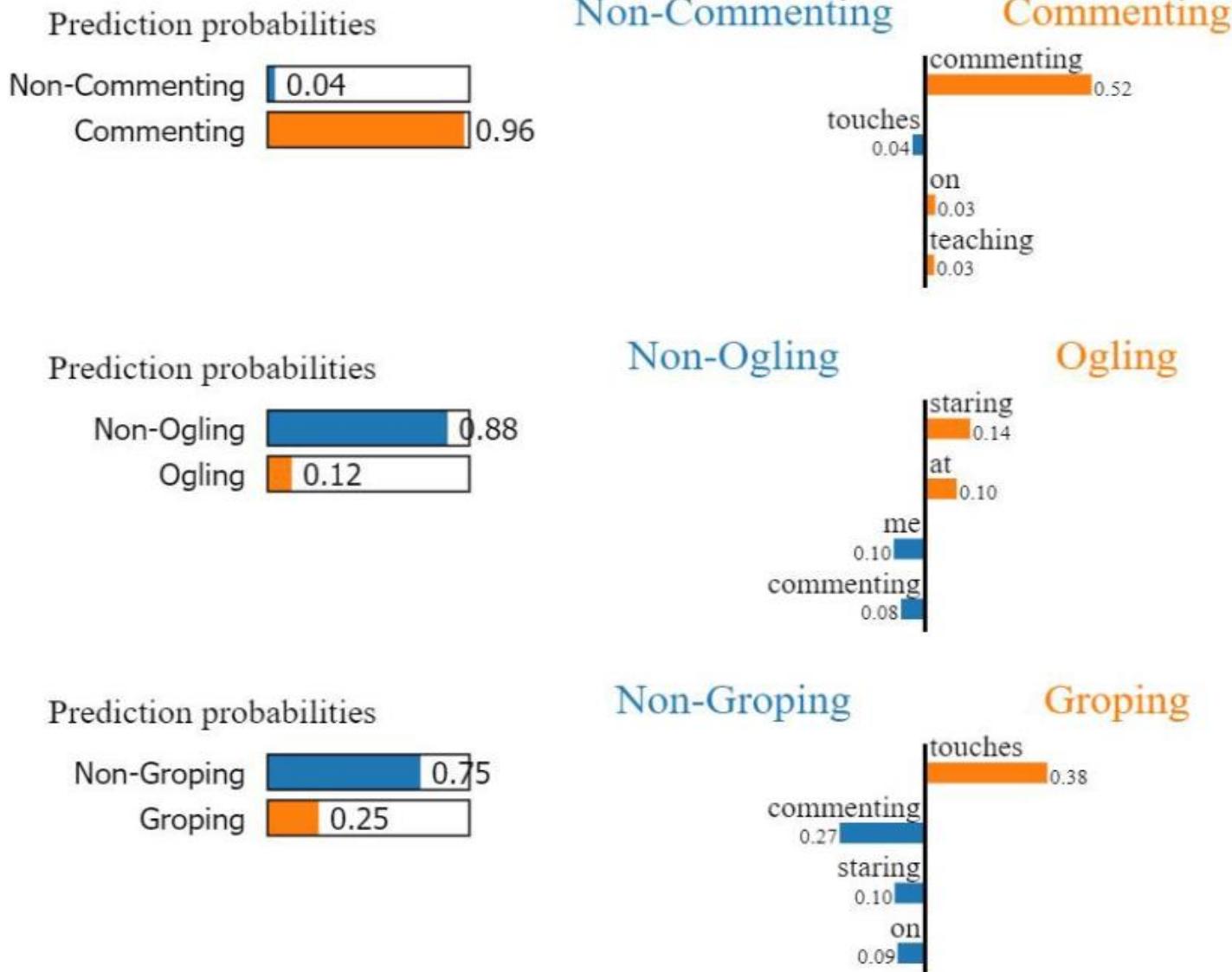


PSEUDO CODE

1. Loading dataset
2. helper functions
3. Text preprocessing and encoding
4. Find the best Algorithm using Hyperparameter tuning
5. Training best Algorithms
6. Feature Importance
7. Classifying new text



RESULTS



INTERFACE PROTOTYPE RESULT

Write Your Story Here...

When I was going to my school there were few boys who were commenting on me. when I reached school a teacher staring at me. There is also another non-teaching staff who touches me every day.

+

Share Your Story...Click Here!

Your story shared.

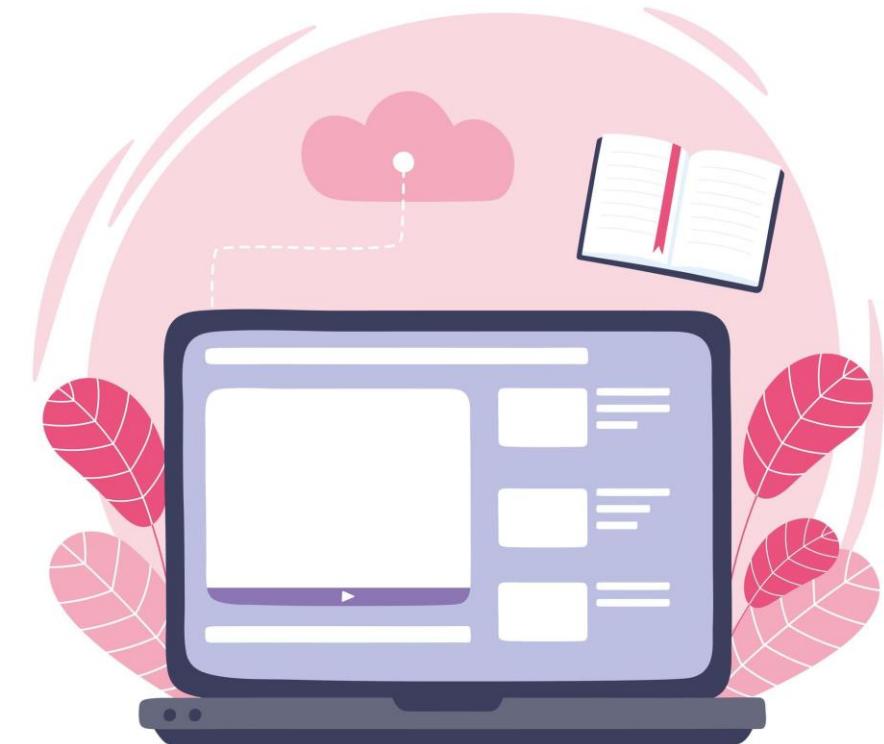
Commenting : 0.96

Ogling : 0.12

Groping : 0.25

Future Work

1. Get more data and retrain the models.
2. Tune the model with different hyper-parameters.
3. Use State-of-the-art algorithms like **BERT**
(Bidirectional Encoding Representation from Transformer).



Application Prototype

The diagram illustrates a process flow. On the left, a box contains a narrative description of an incident. An arrow points from this box to a second box on the right, which is an 'Online Sexual Violence and Sexual Harassment Incident Report Form'. This second box includes a section for selecting types of behavior experienced.

Narrative Description:

"Was walking on the street, a guy stands leaning on the gate of his home and whistles and calls out to me the whole time I cross his home. I take that road daily, except Sunday, to go to music classes. This went on for a month and I finally quit music classes. I was 13 then."

Online Sexual Violence and Sexual Harassment Incident Report Form

Type of behavior experienced (please check all that apply):

- Catcalls
- Stalking
- Public Indecency
- Commenting

Figure 1: Task of sexual harassment story classification to help fill online incident reports.

Github Link : [vipashaaV321/Sexual Harassment Story Classification \(github.com\)](https://github.com/vipashaaV321/Sexual_Harassment_Story_Classification)

Tell your harassment story

STORY

He was looking at me continuously

SUBMIT YOUR STORIES

Case : Staring

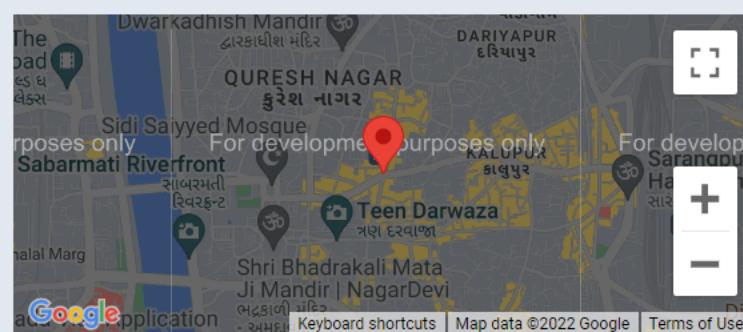
In any kind of trouble you can call on any helpline number

Help Available on	Contact
National Commission for Women Helpline	7827170170
Central Social Welfare Board - Police Helpline	1091/ 1291, (011) 23317004
Shakti Shalini	10920
Shakti Shalini - women's shelter	(011) 24373736/ 24373737
SAARTHAK	(011) 26853846/ 26524061
All India Women's Conference	10921/ (011) 23389680
JAGGRI	(011) 26692700 +918800996640
Joint Women's Programme (also has branches in Bangalore, Kolkata, Chennai)	(011) 24619821
Sakshi - violence intervention center	(0124) 2562336/ 5018873
Saheli - a womens organization	(011) 24616485 (Saturdays)
Nirmal Niketan	(011) 27859158
Nari Raksha Samiti	(011) 23973949
RAHI Recovering and Healing from Incest. A support centre for women survivors of child sexual abuse	(011) 26238466/ 26224042, 26227647

SUBMIT YOUR REALTIME LOCATION

Latitude: 23.02760

Longitude: 72.58710



शक्ति

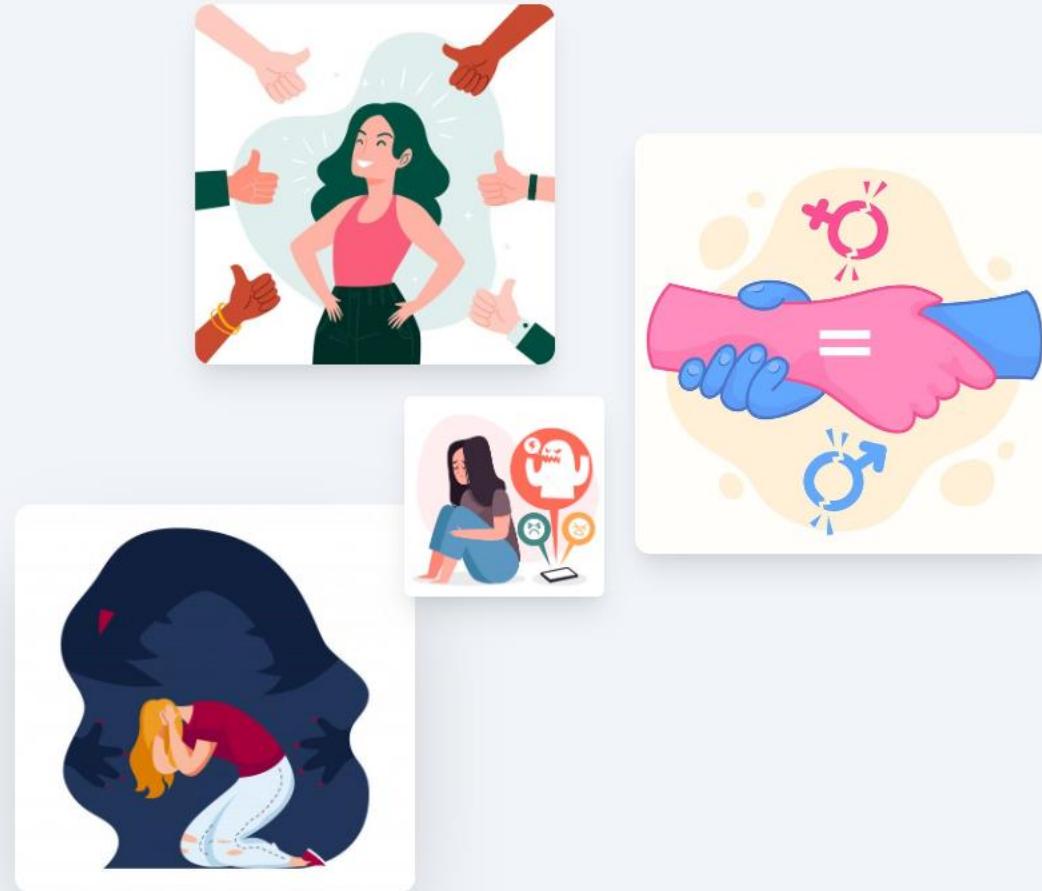
Sexual Harassment Story Classification

GET YOUR STORIES HEARD



features

- Making women "literate" & "skilful"
- Serves as a platform for learning skills and seeking opportunities
- Bridge between knowledge givers and knowledge seekers
- Building a system to build "independent women"
- Spreading legal and financial awareness through audio-visual media
- Motivating and coaching women in sports
- Building networks for knowledge enhancement
- Counselling and empowering the survivors
- Encouraging using reward system





Self Defense

Helps women to be defensive, Provides guidance about self defense techniques using tutorials and virtual environment

Network Building

This can be a key feature in any every empowerment. Ignoring networks can damage or limit your career and leadership effectiveness. The right relationships and ties are known to be an asset in getting upgraded, earning promotions, learning new things and gaining opportunities.

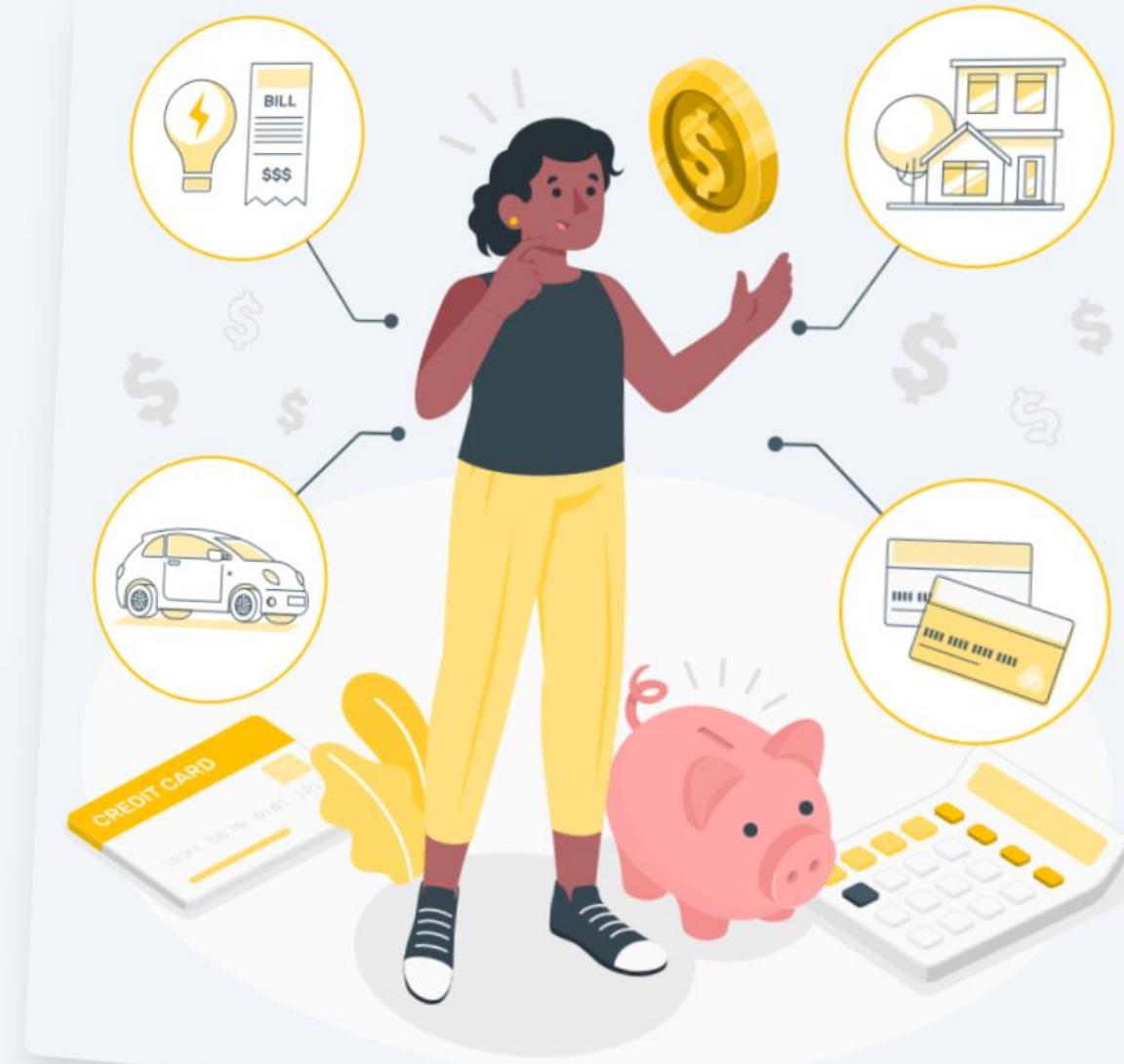
In Shakti ecosystem, we are providing the great opportunity to build a network and also recommend like minded people to connect with one another

Financial Literacy

- Connects with opportunities for earnings
- Knowledge about savings and women abide policies
- Unable women to take advantage of banking services

Legal Assistance

- Injustice on the basis of gender is a problem that is seen all over the world.
- In Shakti, we help women to protect the rights of those who are victims of sexual harassment, domestic abuse, pay-scale inequality, etc.
- We are helping women by providing awareness about government policies and rights, and by providing legal support.





Shedding light on the perspective of “women development” is as equally important as “women equality”. Hence, “SHAKTI: for the women, by the women” aims to empower the women by opening up the doors to various opportunities and assistance in varied areas.

EDUCATION

- Access to primary education - Learning of special survival skills to improve their overall well-being - Help them to learn latest information and communication technologies - Special mother mentorship and health awareness

COUNSELLING

Women's issues can refer to any concern that might impact a woman's mental health. Which might be related to gender stereotyping or assumptions and concerns related to women's health, they are also likely to include other challenges faced by women that have nothing to do with gender.

ENTREPRENEURSHIP

In Shakti, we are going to provide a platform for empowering entrepreneurship among women, to promote the sustainable development of women entrepreneurs for balanced growth in the country.

REWARD SYSTEM

In Shakti, we have created a reward system for women where we are trying to encourage them by providing scratch cards or token coins, By organizing events and conducting competitions where the winners or participants

[REGISTER](#)

How to #BeatTheBias this International Women's Day

Gender bias in the workplace is a clear barrier preventing women from being promoted, being paid equitably, and rising into leadership roles. To #BeatTheBias, companies need to move beyond diversity training and consider the systems and processes that perpetuate bias in their workplace. Reimagining performance management, creating a coaching culture, and committing to transparency are three ways leaders can fight bias within their organizations.

[Show more](#)

Tell your harassment story

STORY

SUBMIT YOUR STORIES

Tell your harassment story

STORY

he is staring at me at the bus station

SUBMIT YOUR STORIES

Case : Staring

In any kind of trouble you can call on any helpline number

Help Available on	Contact
National Commission for Women Helpline	7827170170
Central Social Welfare Board -Police Helpline	1091/ 1291, (011) 23317004
Shakti Shalini	10920
Shakti Shalini - women's shelter	(011) 24373736/ 24373737
SAARTHAK	(011) 26853846/ 26524061
All India Women's Conference	10921/ (011) 23389680
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Joint Women's Programme (also has branches in Bangalore, Kolkata, Chennai)	(011) 24619821
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RAHI Recovering and Healing from Incest. A support centre for women survivors of child sexual abuse	(011) 26238466/ 26224042, 26227647

Tell your harassment story

STORY

some boys said offensive words to me in office

SUBMIT YOUR STORIES

Case : Commenting

In any kind of trouble you can call on any helpline number

Help Available on	Contact
National Commission for Women Helpline	7827170170
Central Social Welfare Board -Police Helpline	1091/ 1291, (011) 23317004
Shakti Shalini	10920
Shakti Shalini - women's shelter	(011) 24373736/ 24373737
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Tell your harassment story

STORY

that boy has snatched my hand

SUBMIT YOUR STORIES

Case : Groping

In any kind of trouble you can call on any helpline number

Help Available on	Contact
National Commission for Women Helpline	7827170170
Central Social Welfare Board -Police Helpline	1091/ 1291, (011) 23317004
Shakti Shalini	10920
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REVIEW WITH RESPECT TO NATIONAL AND INTERNATIONAL SCENARIOS

- **References:**
 - <https://www.analyticsvidhya.com/blog/2021/07/classifying-sexual-harassment-personal-stories/>
 - <https://omdena.com/projects/sexual-harassment>
 - <https://medium.com/omdena/automatic-classification-of-sexual-harassment-cases-a5f8cc604ab9>
 - <https://mdiqbalbajmi00786.medium.com/sexual-harassment-stories-classification-using-nlp-1st-part-aab114e7015c>
 - <https://omdena.com/blog/sexual-abuse-nlp/>

 - **Published results**
 - https://www.researchgate.net/publication/353859973_Sentiment_Analysis-Based_Sexual_Harassment_Detection_Using_Machine_Learning_Techniques
 - <https://arxiv.org/pdf/1809.04739.pdf>





THANK YOU!