GLOBAL REMOTE MENTORSHIP PROJECT

EACH ONE TEACH ONE

Mentor

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Our understanding about this project before we had joined this program

“Initially I was a little aware of the unemployment situation in India. But I never thought that the statistics of the same would be so bad. And even worse, I wasn't aware the action being taken by the govt and so ineffective and the people are not doing much about it. With the world being concerned about things like Global Warming, the share markets and GDP of the countries, I never even considered that unemployment in itself is a natural calamity.” – Prathaam Modi

“Prior to joining the program, I haven't thought about unemployment as much since the environment around me didn't reflect much of it.” – Arihanth Tadanki Srikar

“Unemployment is one of the most pressing issues of today’s times. In India, around 6.8 crore students graduate every year of which only less than 50% get employed. Though this has been a prevalent problem for many decades now, my knowledge of this issue was however very limited. Only when I delved deeper into this topic and the impacts of unemployment did I gain insight into the underlying reasons leading up to this problem.” – Aditi Ravichandran

“I had heard about it from my friends, and then finally thought of being a part of it ” - Vanshika Kedia

“I have heard a lot of cases about unemployment and even students getting depressed, but I never imagined that the case in India is so much worse.” - Harsh Sharma

Our current understanding/learnings from the project.

“After spending around six months working on the project with the team, I realized that when time is provided to a problem-solving task, the solution can definitely be achieved. I learnt ways to manage things and how with the implementation of the existing technology there are still so many possible solutions to at least reduce the existing problems to our lives.” – Prathaam Modi

“The numbers do the talking. There are several reasons for it and we wanted to make us of the existing human resource (mentors) to guide the coming generations. They can help in exploring the students’ interests, strengths, and weaknesses. We wanted to build a smart platform that connects mentors and mentees to better the quality of our population.” – Arihanth Tadanki Srikar

“A new approach - In India, it is evident that the unemployment rate is greater amongst youth with higher educational qualifications due to not assessing their strengths at a fundamental level. This project is aimed at tackling the problem from its very roots by empowering individuals via creating a mentor-mentee interaction-based platform that benefits the mentee in shaping their abilities to the maximum, empowering them to identify challenges and how to potentially tackle them. With the help of the educated mass in India, we can contribute collectively and individually to shape the lives of aspiring students, thereby filling the gap in education provided by formal schools through proper counselling and guidance.” – Aditi Ravichandran

“I feel that knowledge in the field of technology is never enough, being a part of this project and the program from IBM made me learn how one can be innovative and expressive at their thoughts.” - Vanshika Kedia

“Being an android app developer I learnt new ways to approach problems. With the help of our ML team I was able to learn how to incorporate an ML model into a running application. The topic definitely was interesting and I really learnt a lot about India’s current employment status” - Harsh Sharma

Our overall experience after meeting our IBM mentor (quantifiable experience).

“Neeraj Sir, to be very honest, is a mentor that I never imagined I could have. Usually in such projects I expect the mentor to be all about the final result and just giving orders and the "formalities" based directions, but our mentor was the total opposite. He motivated us all the way through the months of project development. He cared more about the approach rather than just the results. I could feel that the team's efforts are being taken into consideration. I really hope all teams are lucky to have such mentors.” – Prathaam Modi

“My initial expectation was that the mentor would guide us in a technical sense, that is what to implement and how to do it. Instead, we were given a lot more freedom and only the broad scope of the project was discussed initially. This enabled us to get more creative and propose various solutions. Every meeting with the mentor dealt with philosophical reasoning of what is the current state and how to improve it in the most effective way.” – Arihanth Tadanki Srikar

“Our mentor Mr. Neeraj Gupta has been a wonderful pillar of support to this project. His vast knowledge of the project scope and his belief in this project has motivated us immensely to move forward without any hassle. During our meetings, he always made sure to explain the concepts clearly and concisely, and made sure everyone was on board. Not only did he provide us with technical guidance but also valuable life lessons to take home.” – Aditi Ravichandran

“An internship-like position can be an experience where you applied and developed skills. I was so fortunate to have Mr. Neeraj Gupta as my mentor during my internship. I thank him all he did to make my four months a valuable learning experience. His leadership made my internship a positive and rewarding experience. I wish him and the entire team a continued success.” – Rahul Verma

“Our mentor, one of the persons whose speeches or words literally felt like its going straight to the heart.Appreciated, explained been there to hear our problems out and

guided like we are his own kids. His constant support made us successfully complete the project” - Vanshika Kedia

“Our mentor, Mr. Neeraj Gupta, is one of a kind mentor I have ever spoken to. He simply knows how to make tasks seem comforting and not stress out the mentees he is working with. I was completely inspired by the way he delivered his thoughts to us and his intentions were very clear since the beginning towards the project” - Harsh Sharma

The overall value of this project in our lives.

“Personally, there are very few things that I consider as "valued" in my life. Those things are the ones that are important and beneficial to me. And this project is definitely one of those things. I have come to know so much about my country's situation on so many different factors. And also working with such an extraordinary team and with such a supportive mentor - I couldn't have asked for anything better. This project will always make me feel proud of the team members and the fact that we came up with a solution to a problem that the country is merely taking action for. I hope I'm able to help the society in many more ways ahead in my future.” – Prathaam Modi

“Alongside engineering and coding of the mentor-mentee allocation algorithm, designing the hate-speech detection, and the NSFW classifier I have also built a different perspective. Exploring the role of technology in tackling social and economic problems.” – Arihanth Tadanki Srikar

“We have all wished to change the world at some point in our lives. Through this project, I had the opportunity to put my skills to use, to deliver a platform that would benefit society achieve the required socio-economic growth in its best possible manner. To be able to contribute to something of this significance that could help millions lead a better life and bring a positive change in society gives me a great deal of satisfaction.” – Aditi Ravichandran

“It was amazing for me to be able to see how the team works on such important projects, and I am grateful to our mentor for inviting me in to observe. This will be such a useful experience to draw on in my future career and I have our mentor to thank for allowing me to see inside the workings of a high-profile project like this one” – Rahul Verma

“This project holds a special place in our lives because we did not only learn the technical part of it, but also how to manage work at the 11th hour and also how we should plan our schedules to meet the deadlines.” - Vanshika Kedia

“This project will be remembered by me my entire life. I have never learnt so much about a particular problem of our country and I really hope that with whatever skills I keep attaining in the future I am able to solve these problems for the country” - Harsh Sharma

ABSTRACT

In today's world, we see a large volume of students struggling on deciding their course for their junior college or whether which course to proclaim to colleges and then where to go for their higher studies. Given that these decisions are pretty life-altering and create an impact on the lives of everyone, many often end up not being satisfied with what they are studying. Some tend to lose their focus and interest in their academics or in other words, begin to "hate" certain subjects ultimately affecting their personal lives both mentally and physically.

This project that we have built is the very solution to reducing the stress in the minds of the youth regarding the above problems and hence providing a platform to get mentored by an experienced teacher, professor, or a mentor. The platform brings together the students under one roof where they get the right guidance towards their field of interest and help them make a better choice when provided with the options. Our goal is simply to try to resolve the enigma of unsatisfied academic experience and in return provide the students with the best supervision and knowledge about the practical world waiting for them out there.

We simply believe in our motto "Each One Teach One!".

KEYWORDS: Unemployment; Epidemic; Mortality; Morbidity; Health; Scarring Effects; Crime; Family; Job Guarantee; Labor Market Dynamics; Involuntary Job Loss; Prevention; Machine Learning; Hate Speech Recognition; NSFW ML models;

Problems

I. Students unhappy with their course:

"Education in India over the years has become more of a means to an end."

That is why even a few years back students were forced by social pressures to take up PCM for their 10+2 and then opt for engineering which would fruit a job at the end of 4 years. Still today people chase for government jobs. Why? Job security. Not required to upskill. A huge portion of the population doesn't get the opportunity to study after schooling. Why? Financial problems. One has to study for their graduation, post-graduation then end up with a job. In today's scenario, even an MBA or a PhD doesn't guarantee a job. ***Fifty per cent of engineers graduate without a job.*** College students mostly do not even know why they are learning a certain topic. Leave alone understanding its application in real life. People working in the private sector seek government jobs. Moreover, most school curricula do not encourage many extra-curricular activities. Even if encouraged, then that is till class 5 at maximum. ***Students crossing 10th grade do not even know what they are good at, what they want to become in life and end up taking careers that are suitable as per society norms and end up being unhappy.***

II. Students graduating without jobs:

According to a report released this year by the Azim Premji University's Centre for Sustainable Employment, ***people with a graduate degree are more than twice as likely to be unemployed than the national average***. The findings are based on surveys of 160,000 households across the country. The report also says women are more likely to be unemployed than men.

Many of the students down Study Lane are the first ones in their families to ever go to university. Government figures show the proportion of India's 18 to 23-year-olds enrolled

in higher education has more than doubled to 25.8 per cent from 12.6 per cent in 2004. India's government hopes this figure will rise to 30 per cent by 2020.

For those graduates who decide to take up low-skilled work, the competition can be intense. The government remains a major source of such jobs. In a recent case reported by Indian media, ***nearly a third of the 93,000 applicants for 62 police courier jobs in the state of Uttar Pradesh had doctorates.***

Government jobs provide security, benefits, and relatively good pay. Minimum salaries are currently set at 18,000 rupees ($259) a month, while 67 per cent of the workforce earn less than 10,000 rupees ($144).

In a recent survey by Aspiring Minds, a skills assessment and research firm, ***employers said 80 per cent of Indian engineering graduates did not meet the minimum requirements of the companies looking to hire them***. Many such firms say prospective candidates lack sufficient industry experience because their courses are too theoretical.

Poorly-trained teachers, an exam system that rewards rote learning and teaching institutions that don't meet the needs of industry, are some of the reasons graduates face a skills deficit, says Varun Aggarwal, co-founder of Aspiring Minds.

III. Unemployment in India:

On the eve of International Youth Day, which is observed Thursday globally, experts and policy commentators in India have called for more steps by the government to create employment opportunities.

According to a 2011 census, people aged 15-24 comprise one-fifth or 19% of India's total population. ***Multiple reports, however, indicate that the number of unemployed youth in South Asian countries is rising.***

The Centre for Monitoring Indian Economy, a think tank, said India's labour participation rate in May was 40%, ***with 15 million jobs lost in the month***.

"May 2021 is also the fourth consecutive month of a fall in employment. The cumulative fall in employment since January 2021 is 25.3 million. Employment in January 2021 was 400.7 million. This has dropped to 375.5 million," said the report published in June.

Similarly, The Financial Express, a leading business daily, recently reported that according to the International Labour Organization's database, India's ***unemployment rate rose to 7.11% in 2020*** – the highest in at least three decades.

"High rates of unemployment are dangerous. If you have so many unemployed people, it means they are neither saving nor consuming. This has a direct impact on economic growth and the country's economic potential," Rajrishi Singhal, a policy consultant who has also worked at the country's top financial newspapers, told Anadolu Agency.

He said that while the youth are employed by the informal sector, where cash flows are unpredictable and erratic, no one can plan investments and other initiatives.

"It also impacts the level of consumption, on the future of the country. When these people are past their working age, they will have little money saved as a formal pension, forcing the government to provide social safety nets ... the burden on the government will be enormous," he said.

Ritu Dewan, vice president of the Indian Society of Labour Economics, said the situation has further worsened due to COVID-19.

"Unemployment was there even before the pandemic, but now the situation has turned from bad to worse," Dewan, who is also a former director of the Department of Economics at the University of Mumbai, told Anadolu Agency. She said that several reports of late have pointed out that unemployment among both men and women is very high in the country, and "we need to take steps urgently."

The government has acknowledged that virus lockdowns have affected economies across the globe, including that of India. Earlier this month, Prime Minister Narendra Modi asked industry representatives to look at ways to increase exports, a move that could help boost employment.

There are various types of unemployment that are prevailing in the country are discussed in following all these types are today challenging for Indian economy.

1. **Voluntary Unemployment:** When a person is not willing to work at the prevailing wage rate.
2. **Frictional Unemployment:** When a person is temporarily out of work while changing jobs.

3. **Casual Unemployment:** In industries, such as construction, catering, agriculture where workers are employed on a day-to-day basis, there are chances of casual unemployment due to short term contracts.
4. **Seasonal Unemployment:** when a person engaged in an occupation does not get the work around the year, he is said to be seasonally unemployed.
5. **Technological Unemployment:** Due to the introduction of new machines improvement in the method of production of ten men threw out of the job. Such unemployment is called technological unemployment.
6. **Cyclical Unemployment:** Electronic copy available at: https://ssrn.com/abstract=3351740 Vol 07 Issue13, Dec 2018 ISSN 2456 – 5083 Page 646 Unemployment which is associated with the movements of trade cycle i.e. boom and slump, inflation and deflation is called cyclical unemployment.
7. **Structural Unemployment:** Unemployment which is associated with economic growth and development is called structural unemployment. It is caused by a decline in demand due to a change in taste & preference or due to any other reason.
8. **Disguised Unemployment:** When more than the required number of persons are engaged in work, then the extra number of people so employed are said to be disguisedly unemployed.

Causes of Youth Unemployment in India:

1. **Inappropriate Educational System: -**

   India's education system does not develop human resources properly. It fails to train the people for the job consistent with the present economic environment. As a result, even the highly educated people in India fail to get an appropriate job. There is no correlation between education and employment as for as Indian planning is concerned.

2. **Lack of Human Resources planning: -**

   The employment planning of the government is not adequate in comparison to population growth. In India near about two lakh, people are added yearly to our

exiting population, but the employment opportunities did not increase according to the proportionate rate of population growth.

3. **Unawareness of Opportunities: -**

   There are several opportunities in various fields like pharmacy, retail telecoms, service sectors and hotel management, hospitality etc. But people are not thinking broadly while they are choosing their degrees to study and while they are searching for jobs. We need to grow our network in order to know the various opportunities around us and we need to diversify our skills, set to cope up with any kind of situation.

4. **Lack of Training Centres**: -

   The problem of unemployment's is due to the lack of training centres for which everyone depends on other people for a job. A person after completing 15 years of education can find a job, with clearly indicates education is the main reason if students are involved in vocational studies like T.V, mobiles, etc. repairing then will find own employments.

5. **Increase in Labour Force**: -

   Since independence, India has witnessed a rapid increase in population. As a consequence, the labour force has also increased at a rapid pace.

6. **Shortage of Jobs**: -

   Limited jobs workers especially youth found themselves without jobs. The prevailing situation forced them either to option for unskilled or casual work in the informal sector. Many who could not afford to go for further education opted for self-employment with extremely low returns

7. **Lack of Entrepreneurship: -**

   In India, most of the youth are schooled for taking up jobs and their mindset is turned mostly on getting a job. The undergraduate level and graduate level do not focus on self-employment. Added is the redtops which are a stumbling block in the regulating bodies and government establishments.

8. **Emphasis on Capital Intensive projects: -**

   Increasing importance has been given to capital-intensive projects during the process of planning. In a labour surplus, economic use of automatic machines and other sophisticated equipment is not very justified as it has resulted in large scale unemployment in the country.

9. **Slow Growth Process: -**

   When a country grows, its production expands employment also expand. In India production has expanded and the economy has grown. As a result of this employment opportunities have expanded. But these opportunities were not adequate enough to solve the problem of unemployment. This has happened because the trend rate of economic growth was quite less than the target.

10. **Excessive Foreign Technology**: - In India there has been a pronounced liking for foreign collaborations, mostly package deals comprising technical services, consultancy, design and also equipment. This has brought technological unemployment to the economy which aggravated the problem. Electronic copy available at: https://ssrn.com/abstract=3351740 Vol 07 Issue13, Dec 2018 ISSN 2456 – 5083 Page 647

India's jobless rate rose as unemployment surged in the nation's rural areas; even as non-farm jobs notch up gains with the economy emerging from pandemic curbs.

Unemployment in October rose to 7.75% from a three-month low of 6.86% in September, data from private research firm Centre for Monitoring Indian Economy Pvt. showed Monday. **Rural unemployment jumped to 7.91% from 6.06% the previous month, whereas urban joblessness dropped to 7.38% from 8.62%, the data showed.**

The hinterland-fuelled growth in the unemployment rate is unlikely to be a major cause for concern to India's policymakers just yet, given manufacturing activity is expanding amid business optimism hitting a six-month high in October. Data from IHS Markit showed manufacturing and services sectors have been adding jobs in recent months to keep up with stronger demand in the economy.
The data from CMIE is one of the early indicators of economic activity and is tracked widely in the absence of timely government data. India's labour ministry recently

reinstated efforts to publish official data, but it doesn't give a complete picture of the job situation in the country.

IV. Global Unemployment:

Carefully laid career paths that suddenly become dead ends, college degrees that no longer open doors, coveted overseas jobs gone in an instant. Whenever the acute phase of the pandemic eventually fades, the crisis will be far from over for young workers in emerging economies.

Worldwide, youth employment fell by 8.7% in 2020, vs. a 3.7% drop for adults, according to a report the International Labour Organization published in June. Although labour markets continue to rebound in line with the global recovery, ILO's researchers noted that unemployment data compiled by governments offer only a partial picture of the problems. Their report highlights a different metric, the share of young people not in employment, education, or training—the so-called NEET rate—which has yet to return to pre-crisis levels in most countries.

Niall O'Higgins, one of the authors of the ILO report, warns of the consequences of being shut out of the labour market for an extended time. "Clearly there is a serious danger that young people being out of work for a long period is likely to damage both the individual's earnings prospects and the society's productivity and long-term earnings potential."

The damaging effects go beyond economics. In countries with relatively young populations, having a large number of out-of-work youth can contribute to criminality and political instability. Warnings of lost generations aren't new, though. A lot of ground was made up—eventually—in the years after the global financial crisis. Optimists argue that those under 30 are in a prime position to learn new skills. Innovative technologies and the gig economy offer opportunities their predecessors didn't have. And accelerating the pace of vaccination will lead to borders reopening, allowing some young people to seek opportunities abroad.

Still, the challenge will be to create enough jobs for all those joining the workforce. Even before the pandemic, the United Nations estimated the world would need to mint 600 million jobs over the next 15 years to meet youth-employment needs.

Governments are going to have to get creative, says Nobel Prize-winning economist Paul Romer, maybe even designing big employment programs aimed specifically at young people. “Having people out of employment is much more costly than we realize. It’s not just the income they would receive or the things they make on the factory line that we lose,” he says. “We lose the process of skill acquisition that goes with being on the job.”

SOLUTION

Given the wide range of undesired inputs from the educational system, society and govt, it’s hard to not take any action and try to at least minimise or reduce these conflicting mental stress over the minds of the youth. Looking at the numbers mentioned above, it’s enough to say that many of the youth have been left unemployed and most of them unsatisfied with their choices of educational courses.

This is where we thought of stepping in and becoming the helping hands. We think that with proper guidance, mentorship and consultation from an experienced person in the shared field of interest as that of the youth, these problems can be better tackled and avoided rather than burdening them with it.

Our team has come up with a solution to create a platform that brings the expertise and experience of a mentor and the enthusiasm and eagerness of a mentee together to help the mentee understand better about the practical world and decide better upon their career paths ahead.

We have developed a platform for mentor-mentee interaction where the mentees after passing a common test with the required cut-off, get to be a part of this program for one year. This program will offer the following:

1. An experienced, knowledgeable mentor that fits into the field of interest of the mentee.

2. Assignments that the mentor may wish to provide for the betterment of the mentee’s practical understanding of tasks.

3. A full-fledged interaction platform to connect with the mentor at any time and schedule meets on a mutual decision.

4. Monthly tests/projects to help the mentee grasp the concept and methods of the topic better.

What is special about this platform?

Well, to start off with we provide the mentee with the mentor's "time". We realised that the youth is not getting enough attention from their guides, working parents, and guardians in this modern generation.

The mentor here will provide a certain amount of time to the mentee every week to make sure the mentee hasn't lost his/her interest in what he/she tends to direct towards. The mentor will be there to motivate and boost the mentee's confidence in his/her field of interest. They will provide their own experiences and make the mentee aware of the real-life challenges, obstacles and solutions to tackle them.

We believe that bookish knowledge is something we all can pay for and attain. But getting a dedicated amount of time from an experienced person who has been working in the field for a long time and has a well-experienced idea about the working of the practical world, would be the perfect match to help the mentee get prepared for what's to come ahead.

We strongly emphasise our motto – "*Each One Teach One!*", which we also decided to make the name of our program and the platform as well.

This section of the documentation will explain the technical aspect of the project.

Starting off with the models used in this project:

I. NSFW model

The acronym NSFW stands for "not safe for work." When used correctly, NSFW is a warning that indicates a link to a webpage, video, photo, or audio clip contains inappropriate content. Although the word is usually associated with pornography, it's often used as a warning label for violent, foul, offensive, or even politically charged content.

Despite its literal meaning (not safe for work), the NSFW acronym is used to save you from any kind of public embarrassment (or, you know, from traumatizing your kids). You may see it in the title of a YouTube video, in the header of an email, or before an outgoing link on a website or news article.

This model classifies imagery as either Suitable For Work (SFW) or Not Suitable For Work (NSFW) based upon the presence of pornographic content in an image. It takes an image as its input and returns a JSON output with floating-point scores for the model's determination of the image's SFW and NSFW probabilities.

This model can be used forensically across an IT system to hunt for unauthorized media. The model could also be used to moderate job data flows and to segregate data when an end user's job requires the viewing of possibly objectionable content.

Algorithms Used :

1) **Classification** - to classify the given image as safe for work or not safe for work.

2) **API** which consumes an image and returns the probability of the labels NSFW (not safe for work) and SFW(safe for work). The sum of the probabilities for both labels is 1.

The API used in the model :

- Used Go and **Clarifai API to Recognize NSFW Images**. The 'Not Safe For Work' (NSFW) model analyzes images and videos and returns probability scores on the likelihood that the image or video contains pornography.

Purpose of the model in the project :

This model is used to detect any kind of improper dresses being worn during the video call duration with the mentor. To protect the security of both the mentor and mentee, it is useful to keep a record of improper images being scanned during the call.

Working of the model : (Readme file)

Tensorflow NSFW Image classifier

Applications can use this model to detect nudity in the images using tensorflow.

Final test accuracy = 98.2% (N=1098)

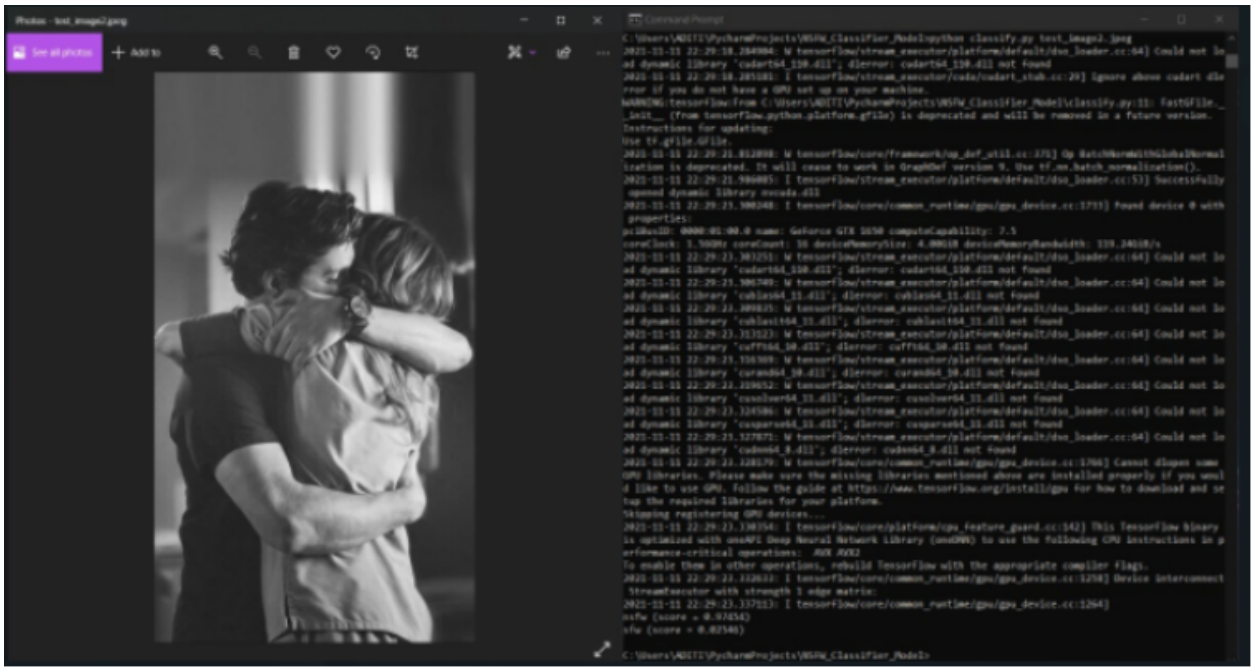
training command

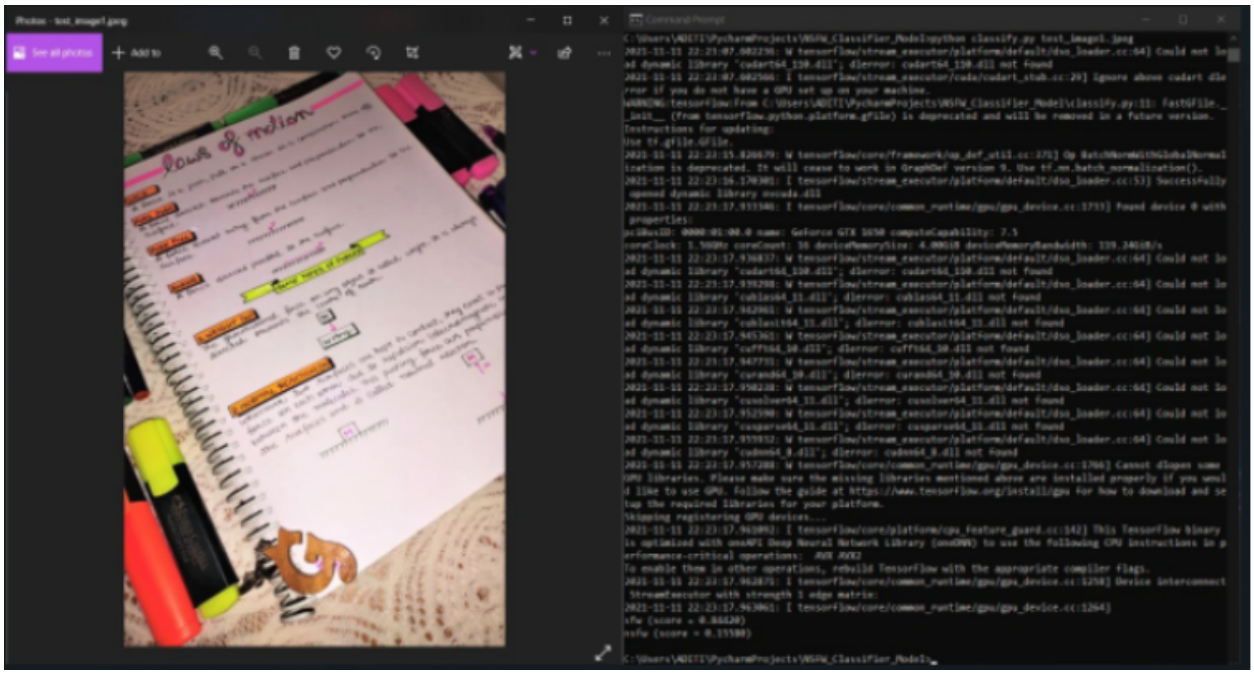
python retrain.py \ --bottleneck_dir=bottlenecks \ --how_many_training_steps=500 \ --model_dir=inception \ --summaries_dir=training_summaries/basic \ --output_graph=retrained_graph.pb \ --output_labels=retrained_labels.txt \ --image_dir=trainimg

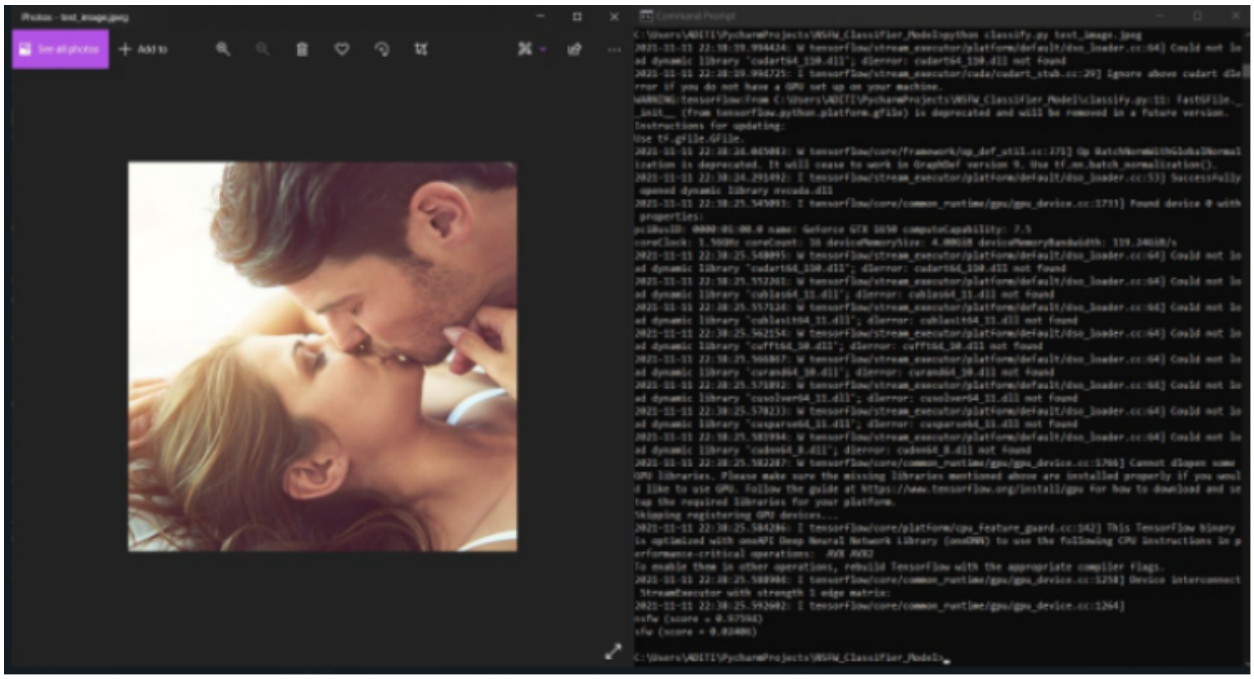
Give a test image to verify the model

```
python classify.py test_image.jpg
```

Image tested against the working model:







Command to run the model :

python classify.py test_image.jpeg

II. Hate Speech Recognition Model (HSRM)

This model is specifically designed to detect any kind or form of abusive, inappropriate or discriminative language used while exchanging messages between the mentor and mentee.

At any instance of time, if either of the party sends an inappropriate message or content across the platform, the model will immediately detect and report the message along with the party with a warning. The threshold for the warning before the party is banned can be set later on when the project is active on a vast audience.

Here are the technical aspects for the same:

Source of Data:

We can load the data in a data frame by using the pandas library. We just have to enter the following commands:

```
In [ ]: tweets_df = pd.read_csv('https://cainvas-static.s3.amazonaws.com/media/user_data/cainvas-admin/twitter_labeled_data.csv')
```

Loading dataset:

Running the above command will load the data in a data frame which we will use for model training.

Data Pre-processing:

This step involves data cleaning and pre-processing our data for model training in order to achieve good performance and for better data visualization. In this step, we will drop a column of the serial numbers as it is not required for model training and we will also add a new column for tweet length. Next, we will segregate our data on the basis of the class of tweets for data visualization. This can be achieved by running the following commands:

```
In [ ]: tweets_df = pd.read_csv('https://cainvas-static.s3.amazonaws.com/media/user_data/cainvas-admin/twitter_labeled_data.csv')
```

Our next step will be to remove the punctuation from the tweets and remove the stopwords from the tweets and then we will finally vectorize our words in the tweets so as to assign a unique number to all the words in our tweets which we will later pass on to our hate speech detection model. This vectorized vector will be passed on to our model in a variable along with the label.

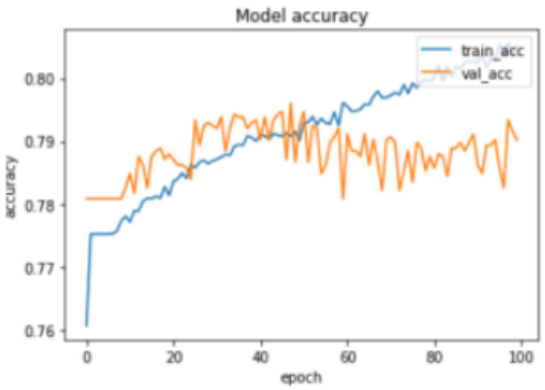
```
In [ ]: def message_cleaning(message):
            Test_punc_removed = [
                char for char in message if char not in string.punctuation]
            Test_punc_removed_join = ''.join(Test_punc_removed)
            Test_punc_removed_join_clean = [word for word in Test_punc_removed_join.split(
            ) if word.lower() not in stopwords.words('english')]
            Test_punc_removed_join_clean_join = ' '.join(Test_punc_removed_join_clean)
            return Test_punc_removed_join_clean_join
```

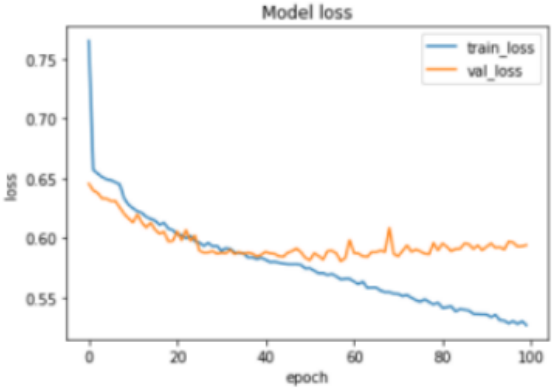
Model Training:

After creating the dataset next step is to pass our training data into our Deep Learning model to learn to classify various classes of tweets. The model architecture used was:

```
Model: "sequential_18"
_________________________________________________________________
Layer (type)                 Output Shape              Param #
=================================================================
embedding_18 (Embedding)     (None, None, 32)          6400
_________________________________________________________________
lstm_15 (LSTM)               (None, 32)                8320
_________________________________________________________________
repeat_vector_13 (RepeatVect (None, 200, 32)           0
_________________________________________________________________
global_average_pooling1d_13  (None, 32)                0
_________________________________________________________________
dense_138 (Dense)            (None, 32)                1056
_________________________________________________________________
dense_139 (Dense)            (None, 16)                528
_________________________________________________________________
dense_140 (Dense)            (None, 3)                 51
=================================================================
Total params: 16,355
Trainable params: 16,355
Non-trainable params: 0
_________________________________________________________________
```

The loss function used was “categorical_crossentropy” and the optimizer used was “Adam”.For training the model we used Keras API with TensorFlow at the backend. Here are the training plots for the model:





Prediction:

In [ ]:
```
print(tweets_df['tweet'][0])
print(tweets_df['tweet'][1])
print(tweets_df['tweet'][2])
print(tweets_df['tweet'][3])
print(tweets_df['tweet'][4])
```

```
!!! RT @mayasolovely: As a woman you shouldn't complain about cleaning up
your house. &amp;amp; as a man you should always take the trash out...
!!!!! RT @mleew17: boy dats cold...tyga dwn bad for cuffin dat hoe in the
1st place!!
!!!!!!! RT @UrKindOfBrand Dawg!!!! RT @80sbaby4life: You ever fuck a bitc
h and she start to cry? You be confused as shit
!!!!!!!!! RT @C_G_Anderson: @viva_based she look like a tranny
!!!!!!!!!!!!! RT @ShenikaRoberts: The shit you hear about me might be tru
e or it might be faker than the bitch who told it to ya &#57361;
```

In [ ]:
```
df = pd.DataFrame(columns=['Predicted Labels', 'Actual Labels'])
df['Predicted Labels'] = preds_class
df['Actual Labels'] = tweets_df['class'][:5]
df.head()
```

Out[ ]:

	Predicted Labels	Actual Labels
0	2	2
1	2	1
2	1	1
3	1	1
4	1	1

Model accuracy rate:

In [ ]:
```
loss, acc=hate_speech_model.evaluate(X_test,y_test,verbose=2)
```

```
78/78 - 1s - loss: 0.6072 - acc: 0.7761
```

3. Mentor-mentee allocation algorithm:

The goal is to allocate a mentor to every mentee. We do this by picking a mentor that is most similar to the mentee in terms of the information we have.

The challenge is to convert this information into a form that is interpretable by the machine. We need to convert non-numeric fields to numeric fields. For example, if we were to match based on their interests then we need to represent similar interests with values closer to each other as compared to dissimilar interests.

Our approach first converts non-numeric data to numeric data and then applies K-Nearest Neighbours (KNN). For every data point, we construct a point in an N-dimensional space where N is the number of features considered. KNN finds the pairwise distance between the coordinates of the mentee with the ones of all the mentors and finds the top K matches. Based on the limit of how many mentees a mentor wants to take up, we perform the allocation.

The KNN algorithm assumes that similar things exist in close proximity. In other words, similar things are near to each other.

"Birds of a feather flock together."

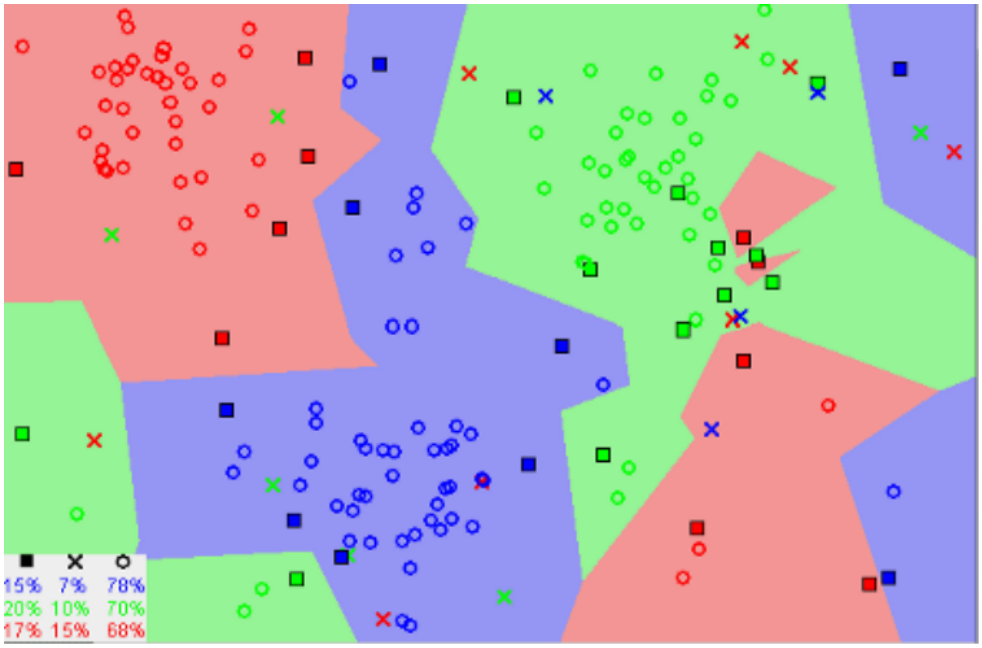


Image showing how similar data points typically exist close to each other

Notice in the image above that most of the time, similar data points are close to each other. The KNN algorithm hinges on this assumption being true enough for the algorithm to be useful. KNN captures the idea of similarity (sometimes called distance, proximity, or closeness) with some mathematics we might have learned in our childhood—calculating the distance between points on a graph.

There are other ways of calculating distance, and one way might be preferable depending on the problem we are solving. However, the straight-line distance (also called the Euclidean distance) is a popular and familiar choice.

The KNN Algorithm

1. Load the data
2. Initialize K to your chosen number of neighbours
3. For each example in the data
    a. Calculate the distance between the query example and the current example from the data.
    b. Add the distance and the index of the example to an ordered collection
4. Sort the ordered collection of distances and indices from smallest to largest (in ascending order) by the distances
5. Pick the first K entries from the sorted collection
6. Get the labels of the selected K entries
7. If regression, return the mean of the K labels
8. If classification, return the mode of the K labels

KNN works by finding the distances between a query and all the examples in the data, selecting the specified number of examples (K) closest to the query, then voting for the most frequent label (in the case of classification) or averages the labels (in the case of regression).

The Platform:

The mentees will get to enrol in this program via a Nationwide common test. They have to cross a certain cut-off set by the authorities to be eligible for the program. The mentees must be either in :

i. School (9th,10th,11th or 12th) (Any Board)

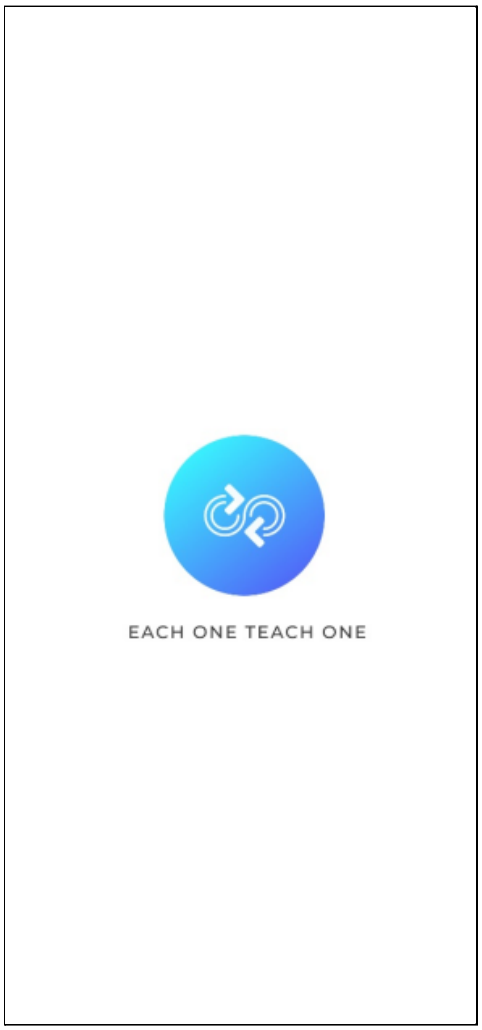
ii. College/University (Attaining their Bachelor’s Degree Currently)

iii. Home-Schooling or none of the above (Age: 14 – 18)

After passing the common test, the students will be assigned with their mentees by our mentor-mentee allocation algorithm based upon their mutual field of interests.

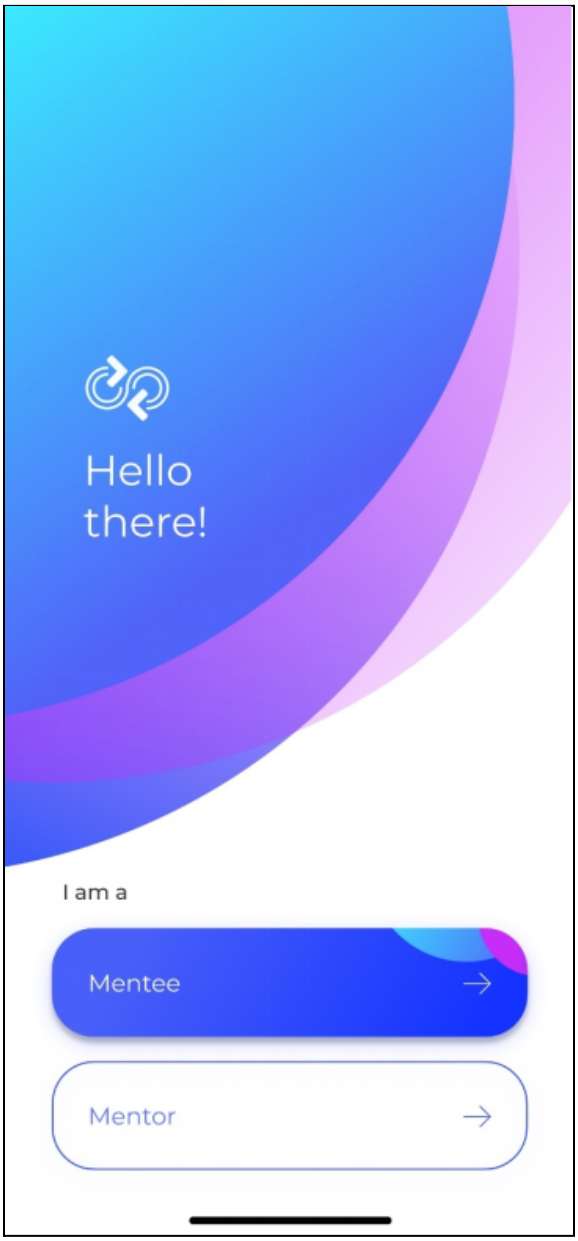
The program will begin all from the same date for a course of one year.

Refer to the screenshots below to understand the flow of the platform.



LAUNCH SCREEN

The signup flow

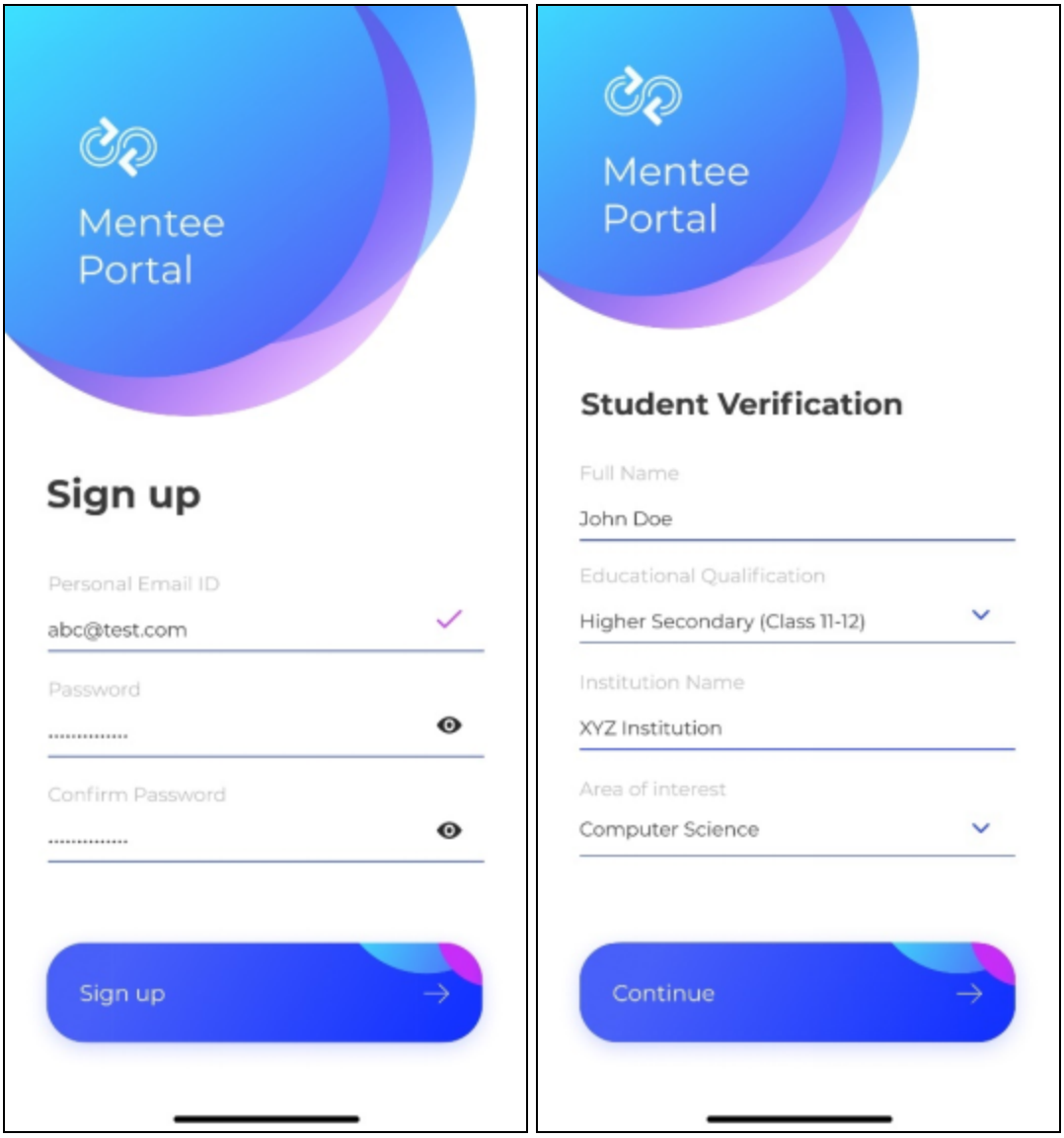


WELCOME SCREEN

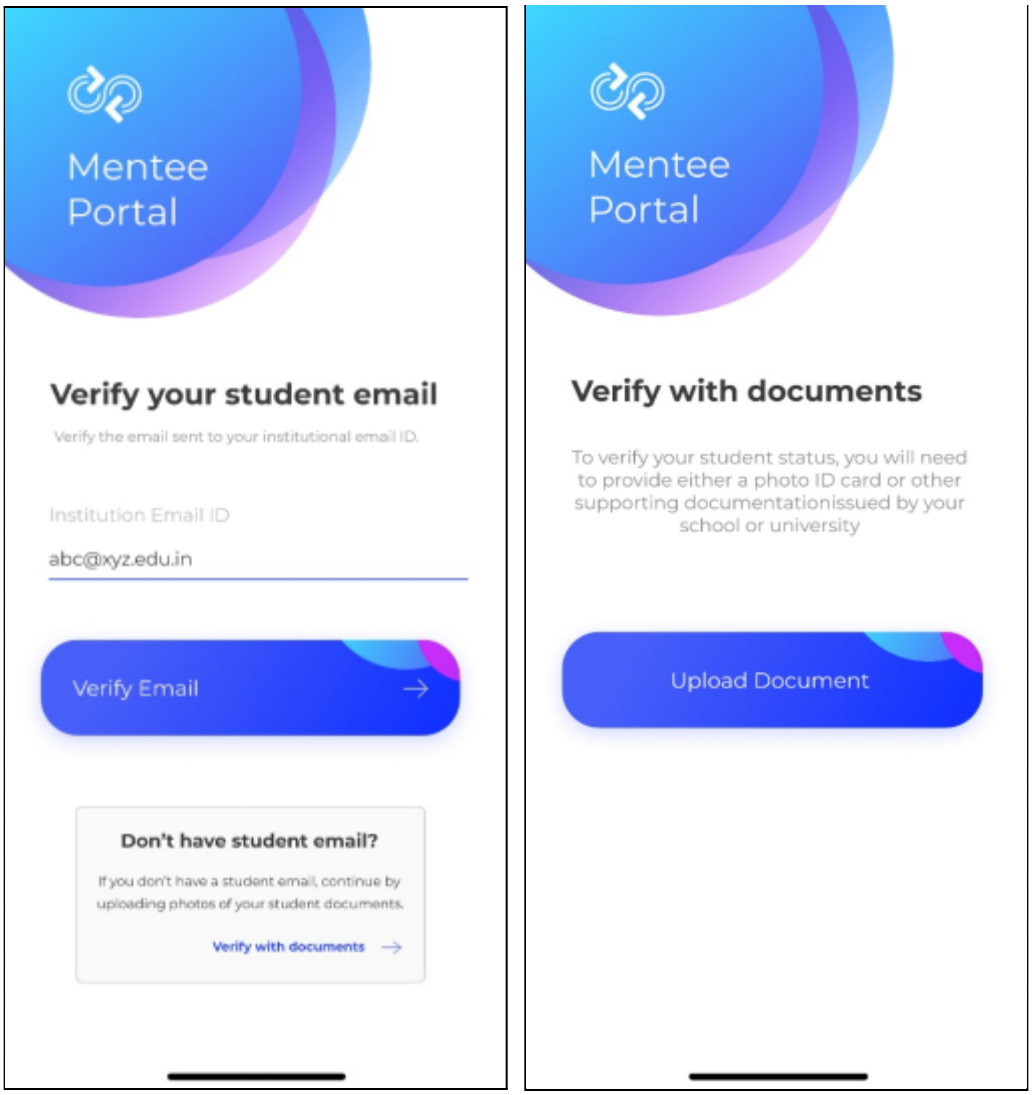
The user has to select whether they are a mentor or a mentee to further proceed on to the platform

SIGN IN/SIGN UP SCREEN

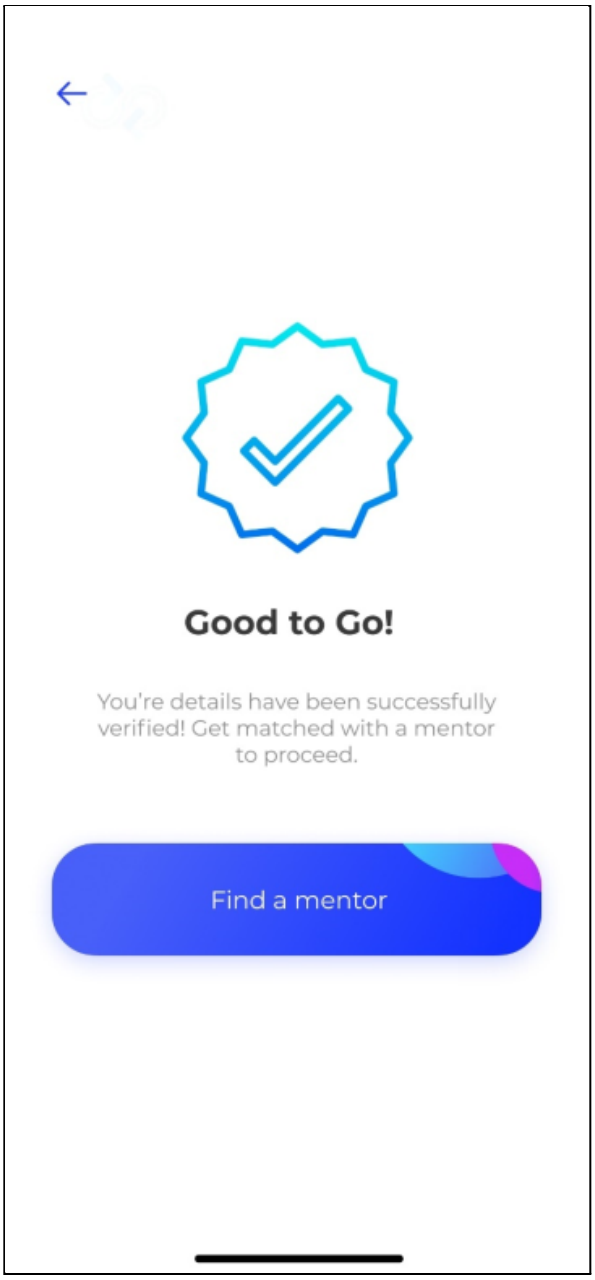
The mentee needs to signup if not already registered and sign in with their credentials once registered.



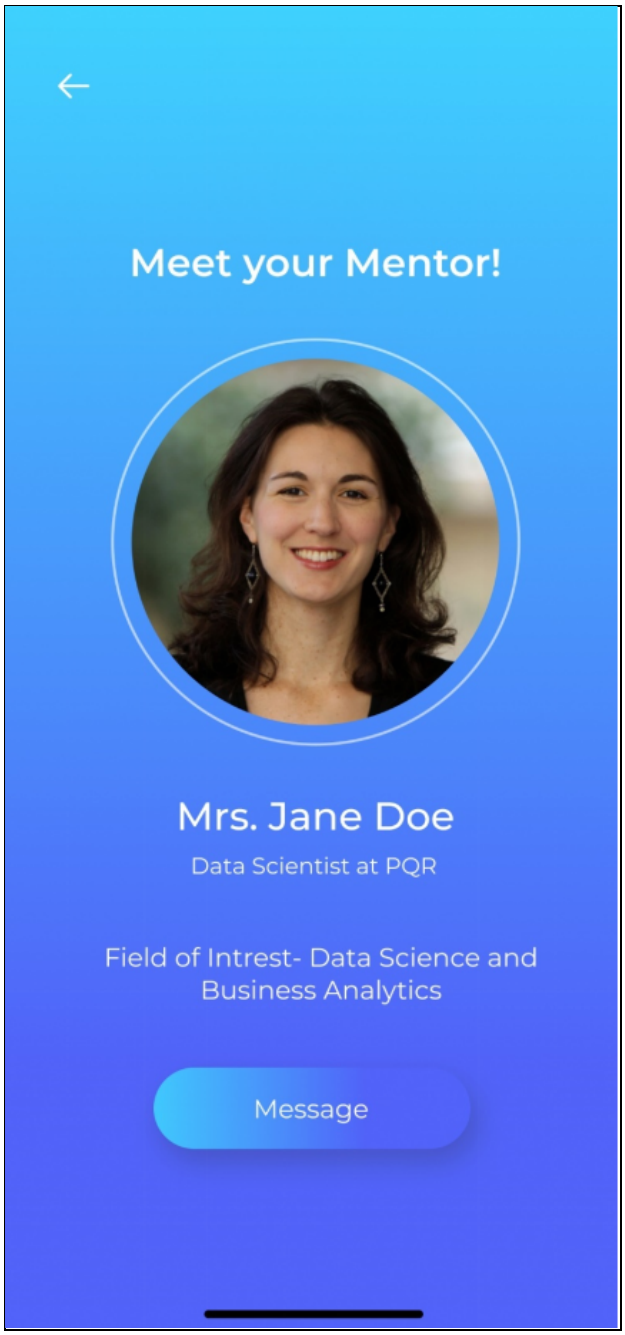
The mentee should fill up the required fields as asked by the platform correctly with full names. Any false input would result in the banning of the respective mentee for that year.



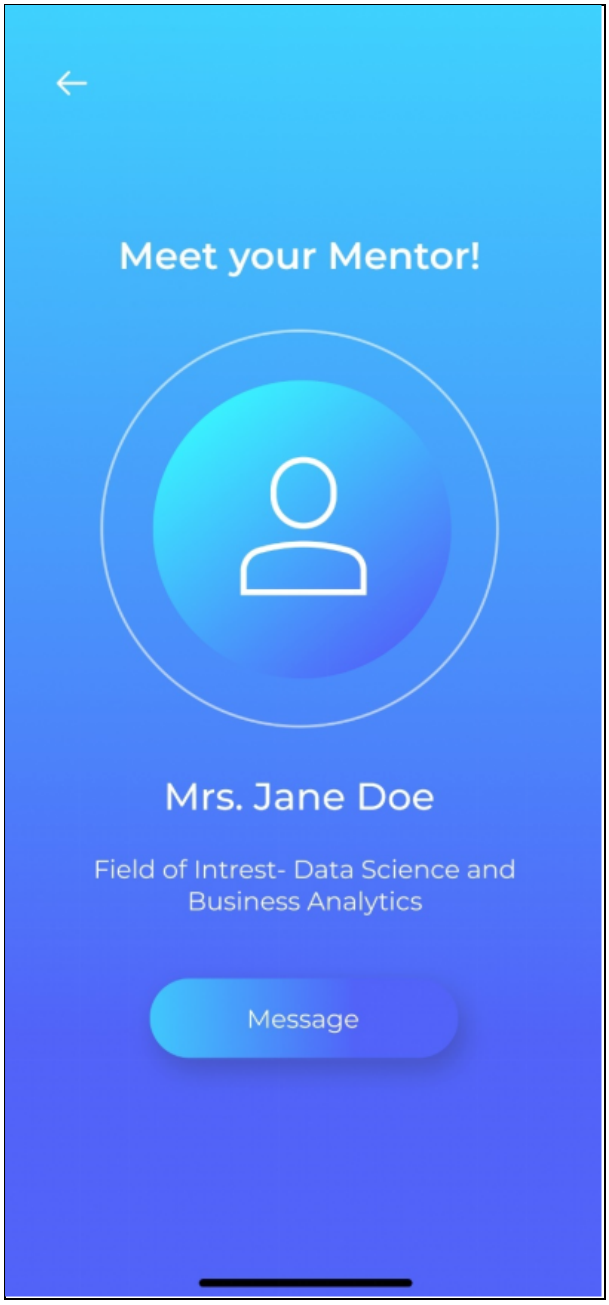
The mentee can verify using their student email id or upload other supporting documents issued by school/ university.



The Success screen for registration

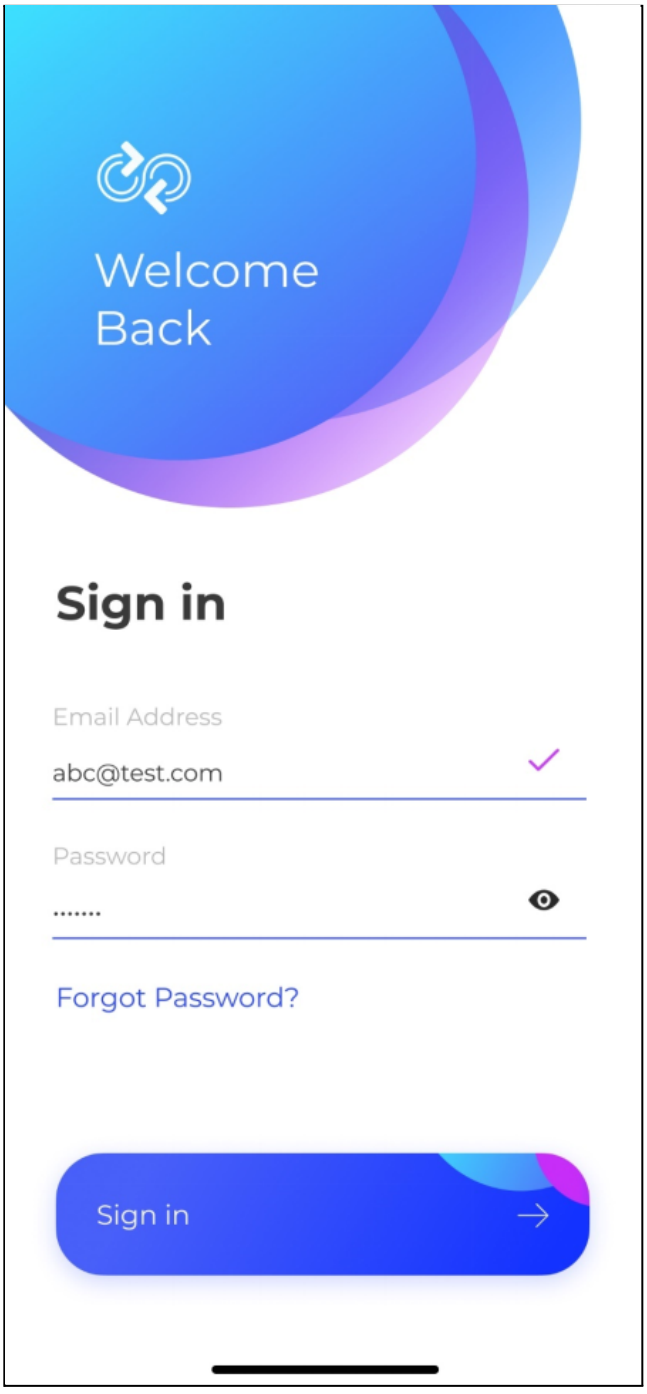


Once the registration is complete for all within the deadline, the mentor will be allocated to all.

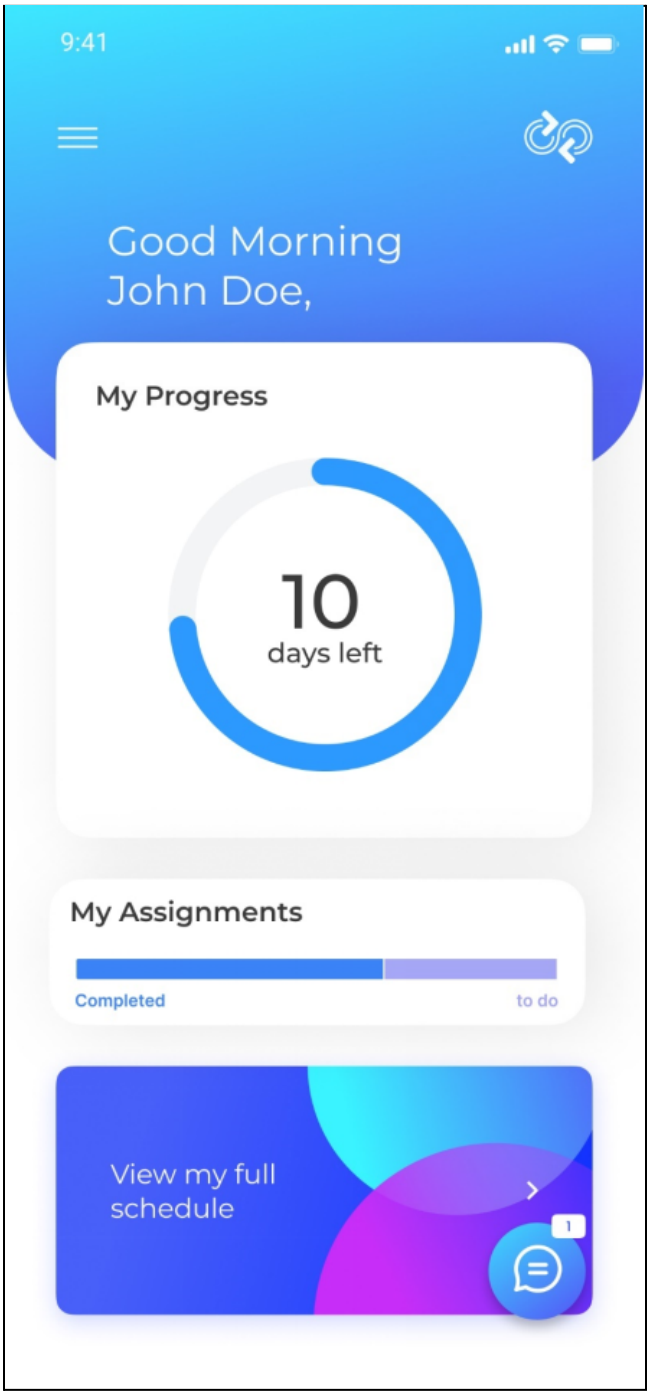


The mentor may have the option to not disclose his/her identity or photo. In the case of which the screen will appear as shown above.

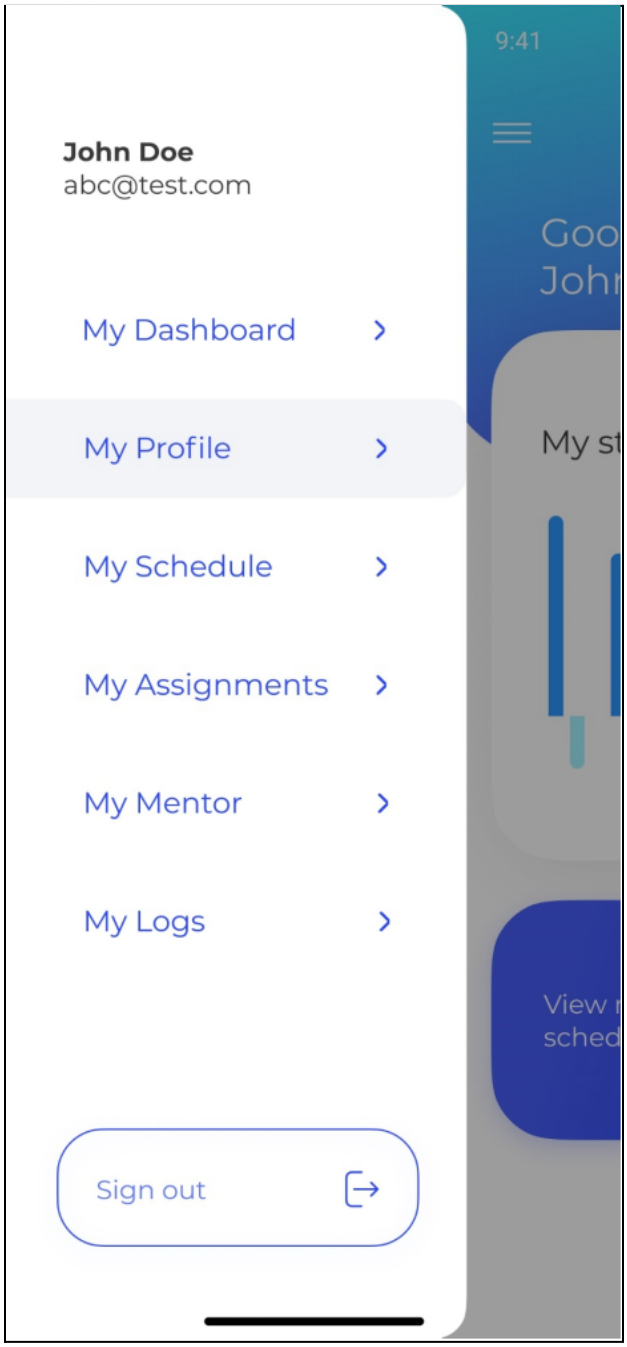
Dashboard of the mentee



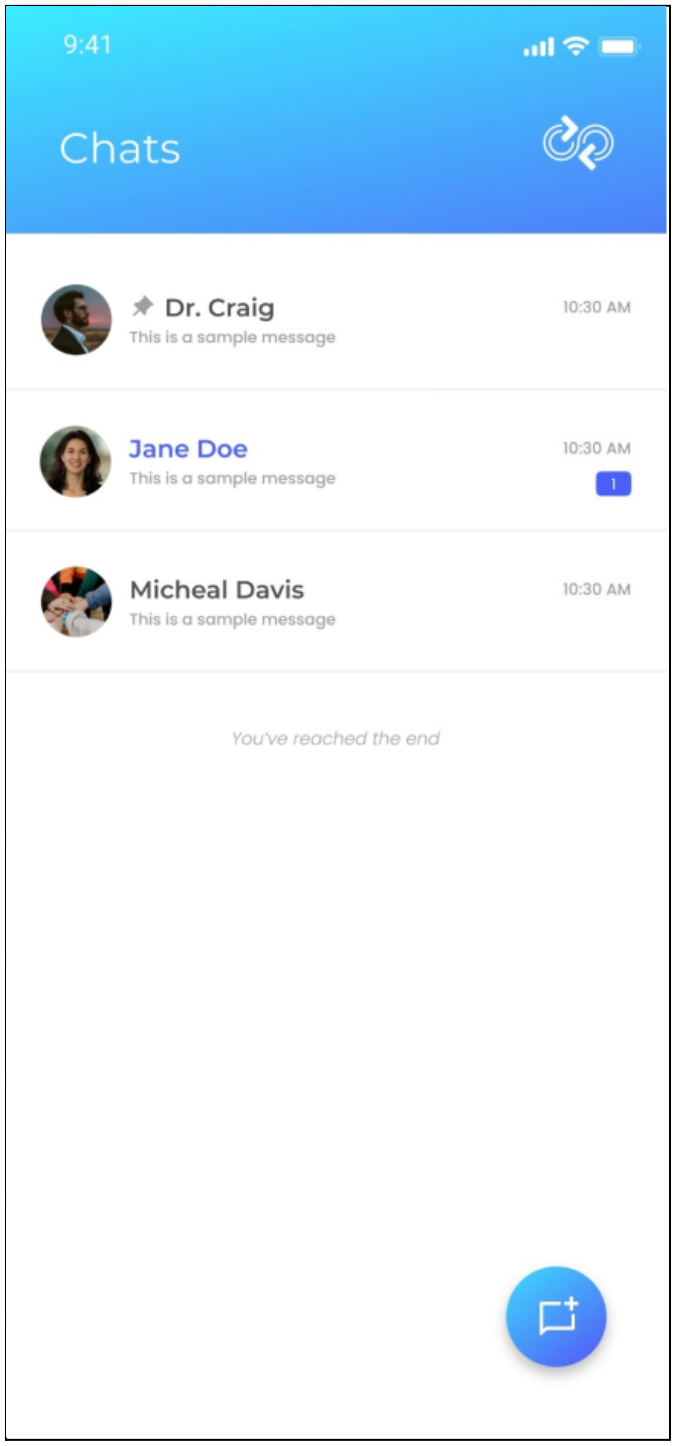
Sign-in Screen



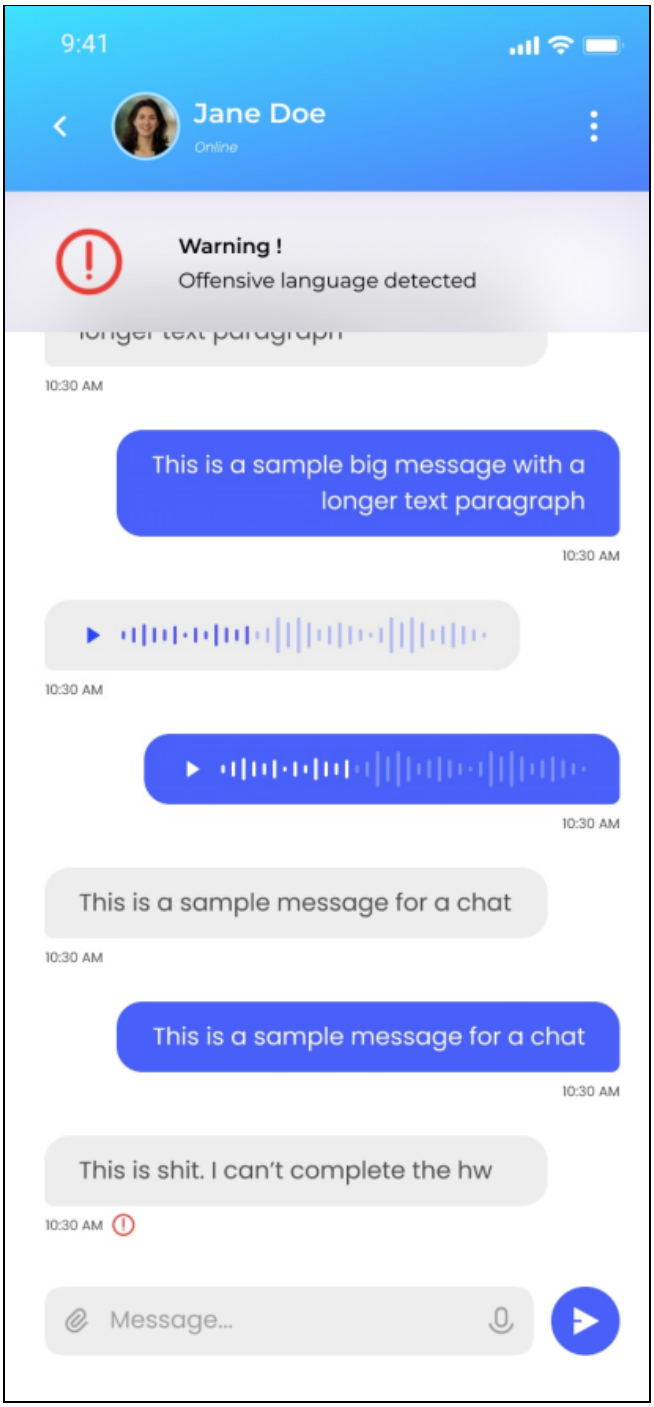
Home Page: It'll show the brief stats of the mentee's profile with information such as the assignments progress, schedules and meets.



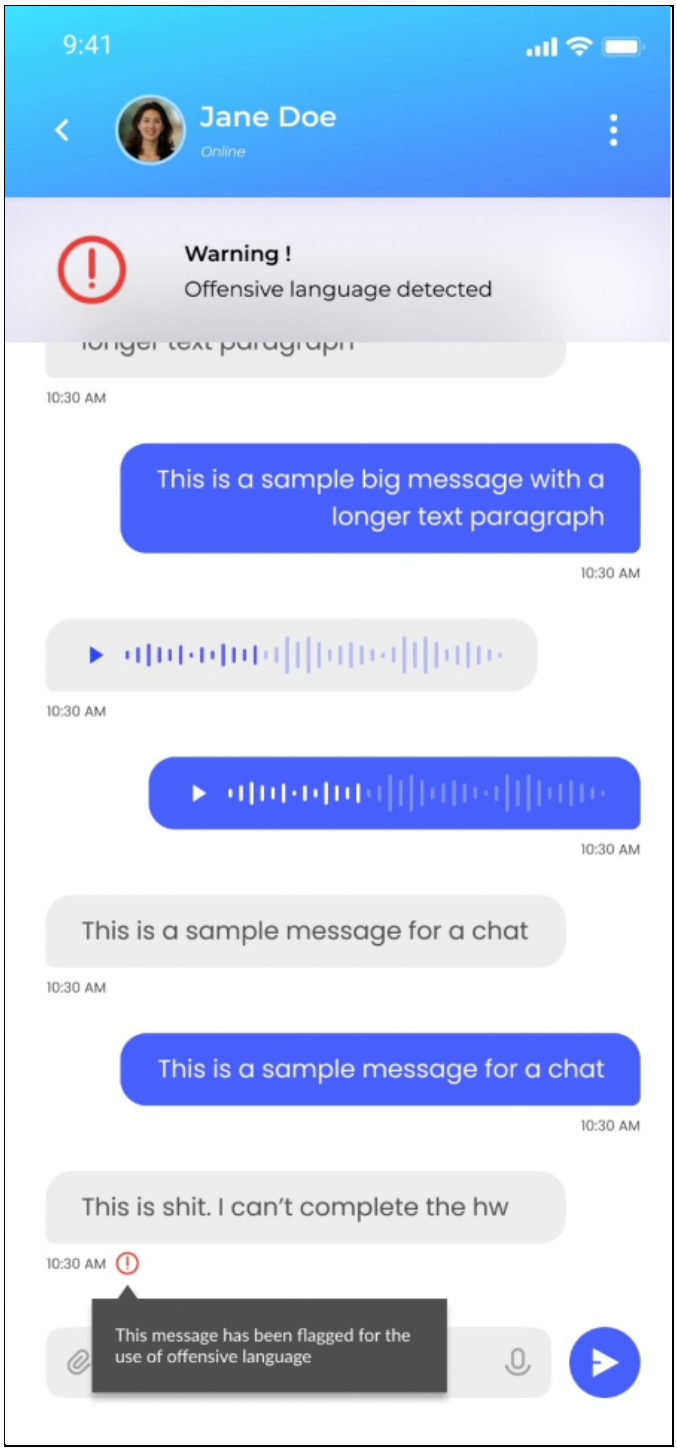
Navigation bar directing the user to other segments of the platform



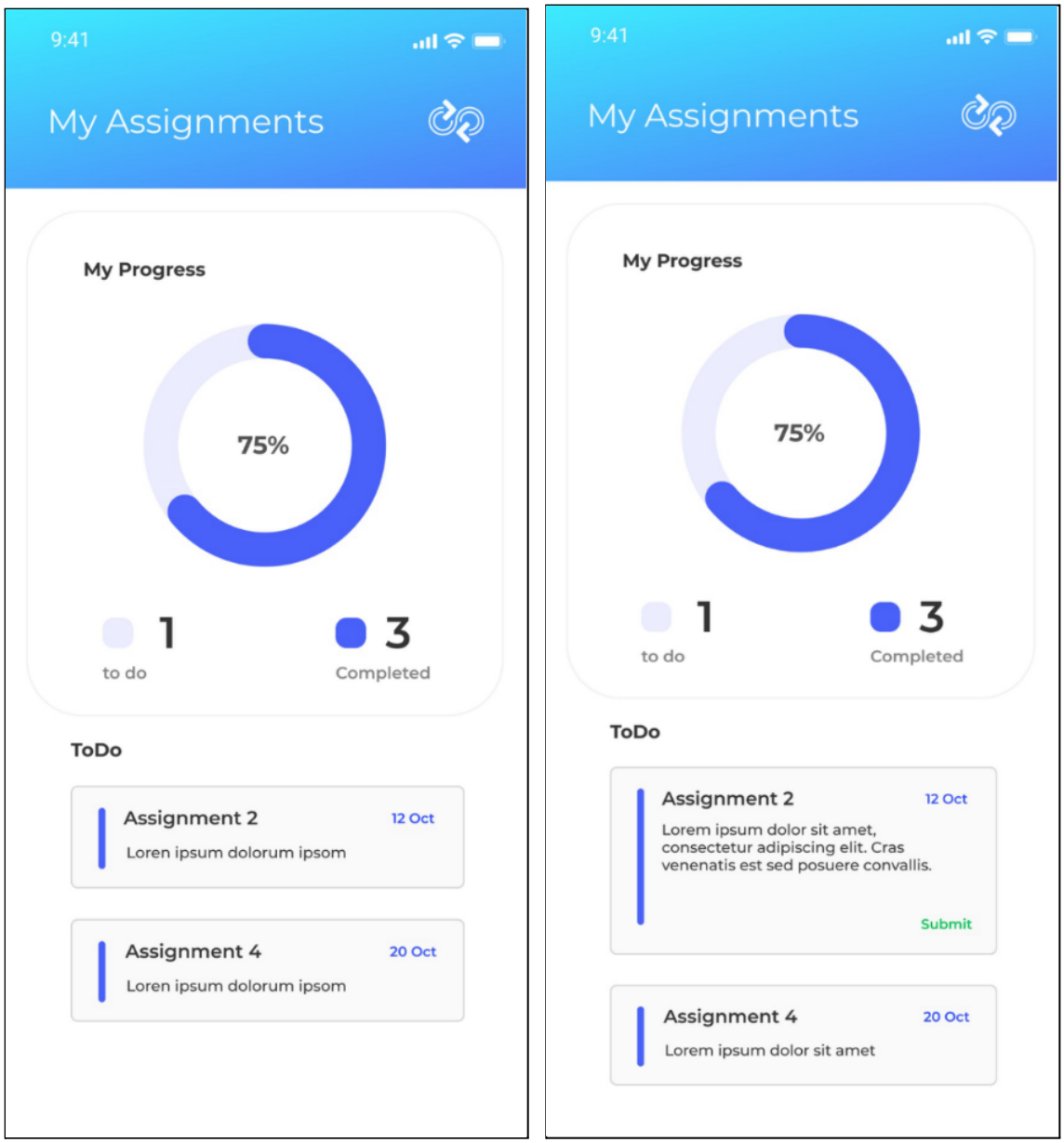
Chat Log Screen



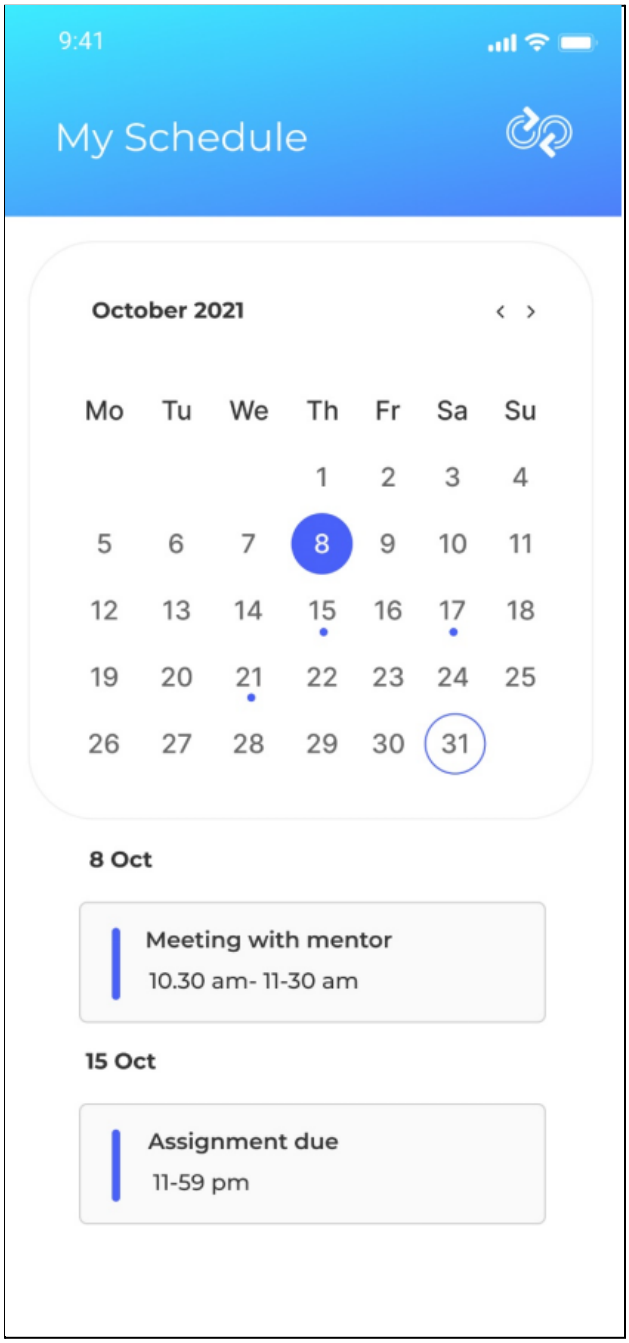
Chats Interface showing warning by the Hate speech detection Model



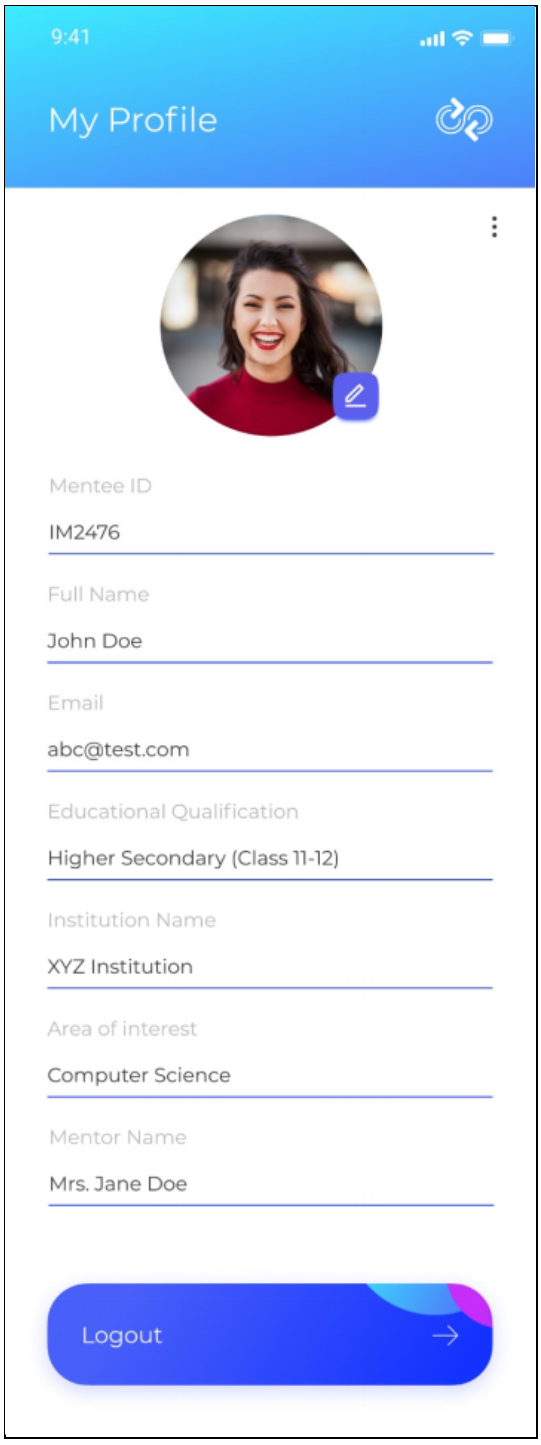
The system showing the warning



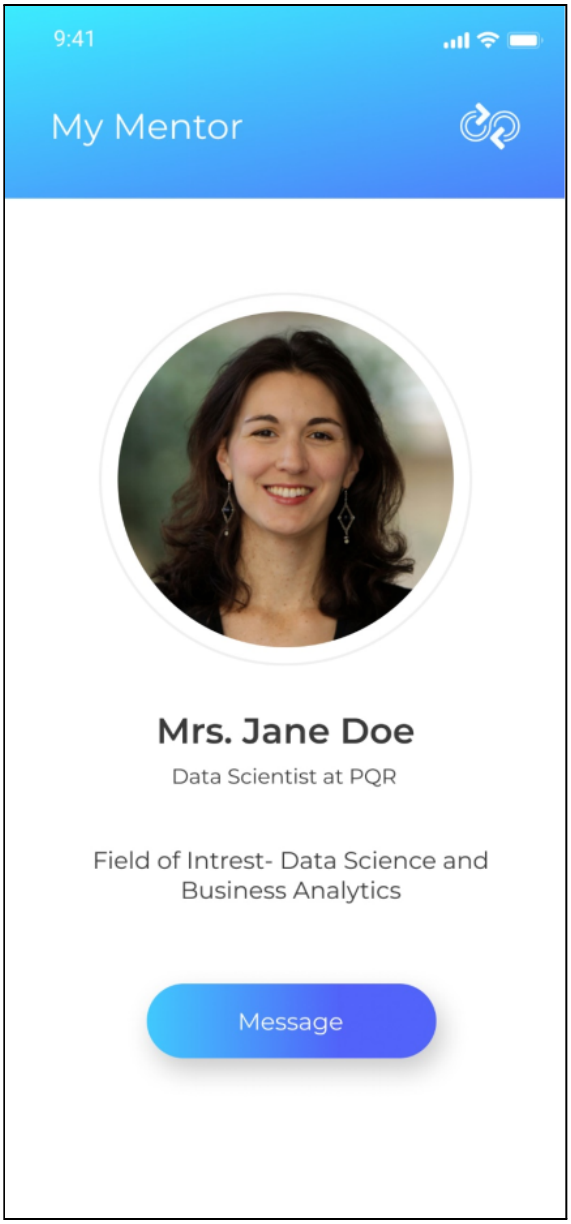
Assignments screen


9:41
My Schedule
October 2021
Mo Tu We Th Fr Sa Su
1 2 3 4
5 6 7 8 9 10 11
12 13 14 15 16 17 18
19 20 21 22 23 24 25
26 27 28 29 30 31
8 Oct
Meeting with mentor
10.30 am- 11-30 am
15 Oct
Assignment due
11-59 pm

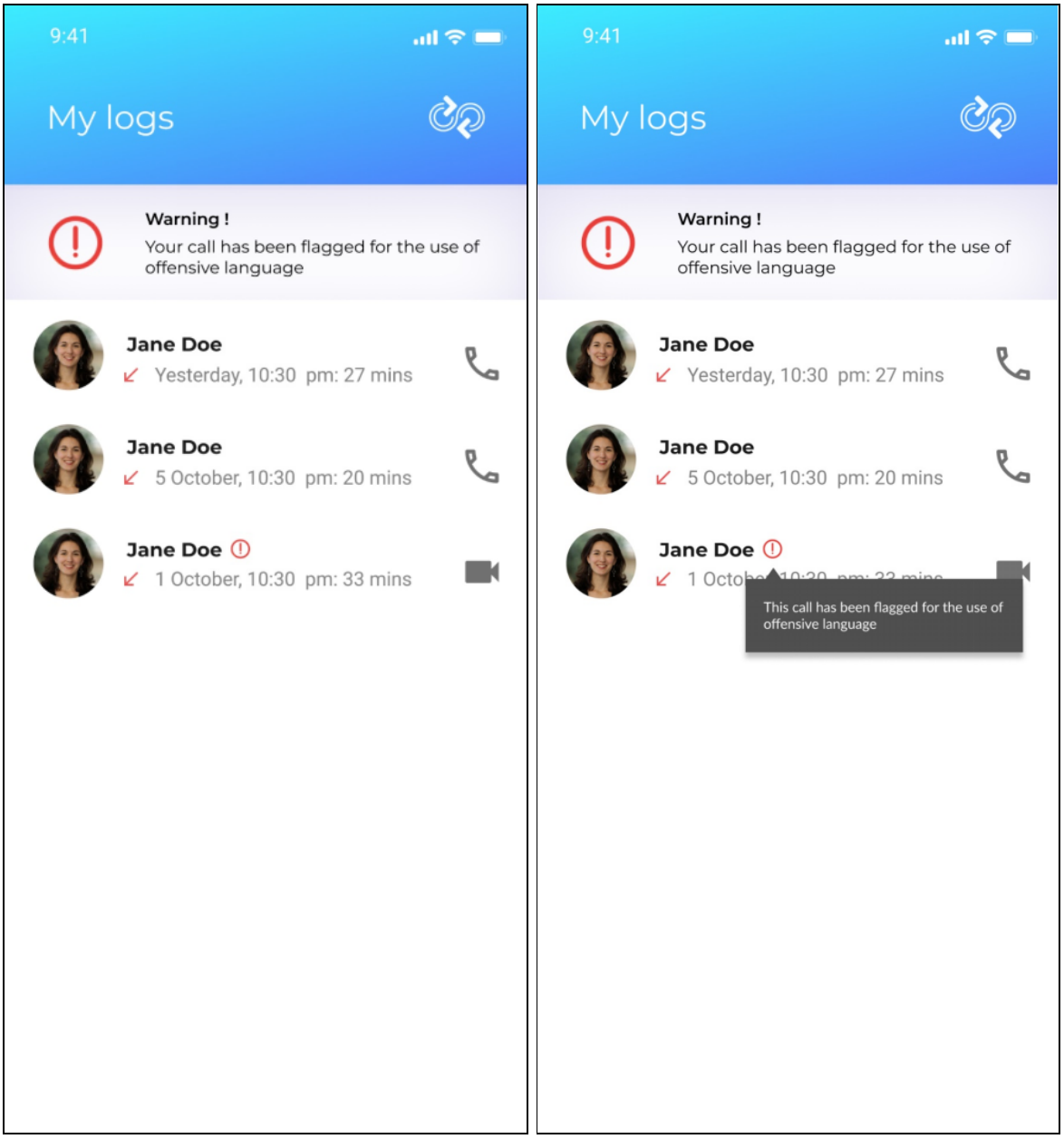
My Schedule


9:41
My Profile
Mentee ID
IM2476
Full Name
John Doe
Email
abc@test.com
Educational Qualification
Higher Secondary (Class 11-12)
Institution Name
XYZ Institution
Area of interest
Computer Science
Mentor Name
Mrs. Jane Doe
Logout

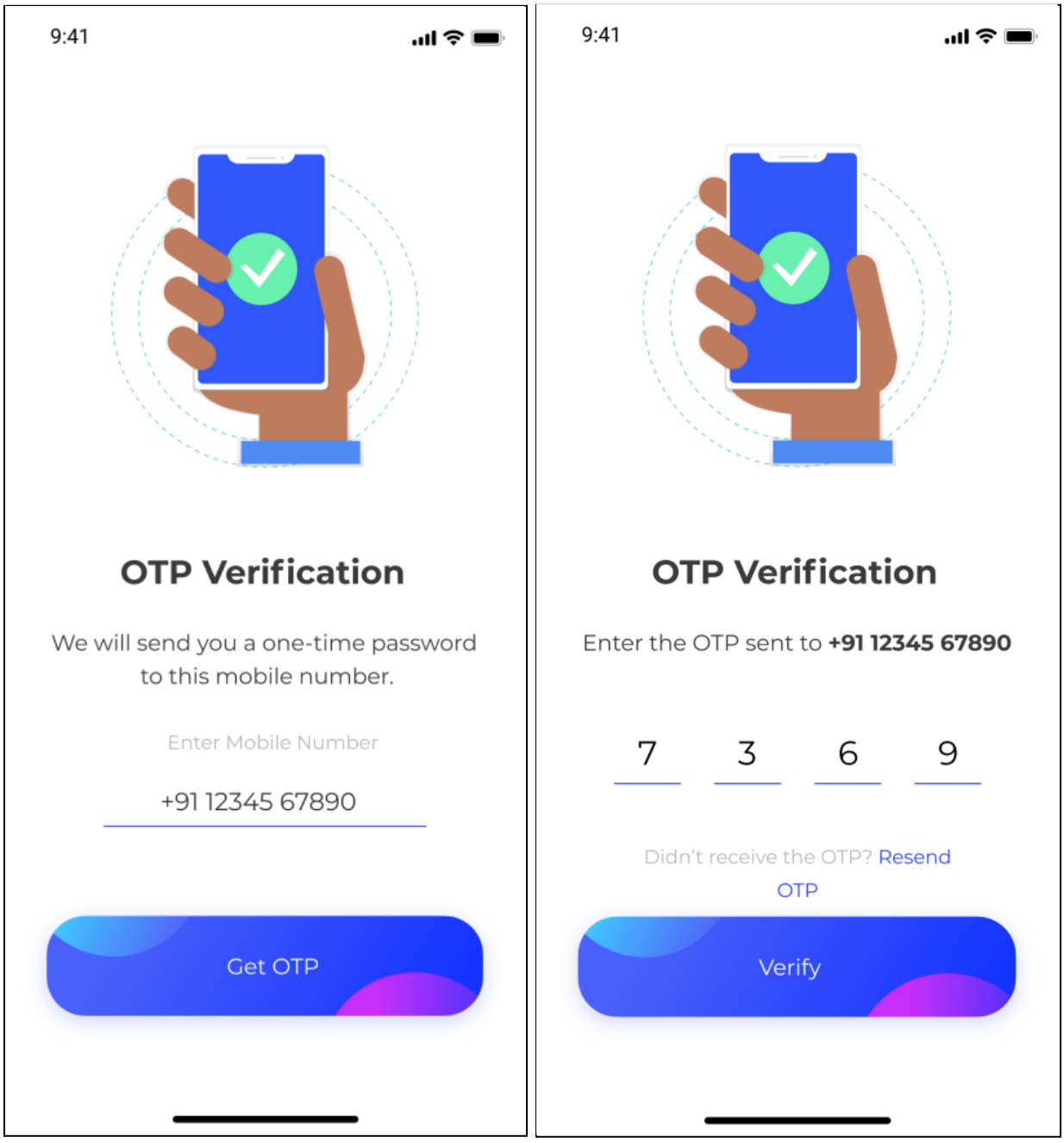
My Profile


9:41
My Mentor
Mrs. Jane Doe
Data Scientist at PQR
Field of Intrest- Data Science and Business Analytics
Message

My Mentor

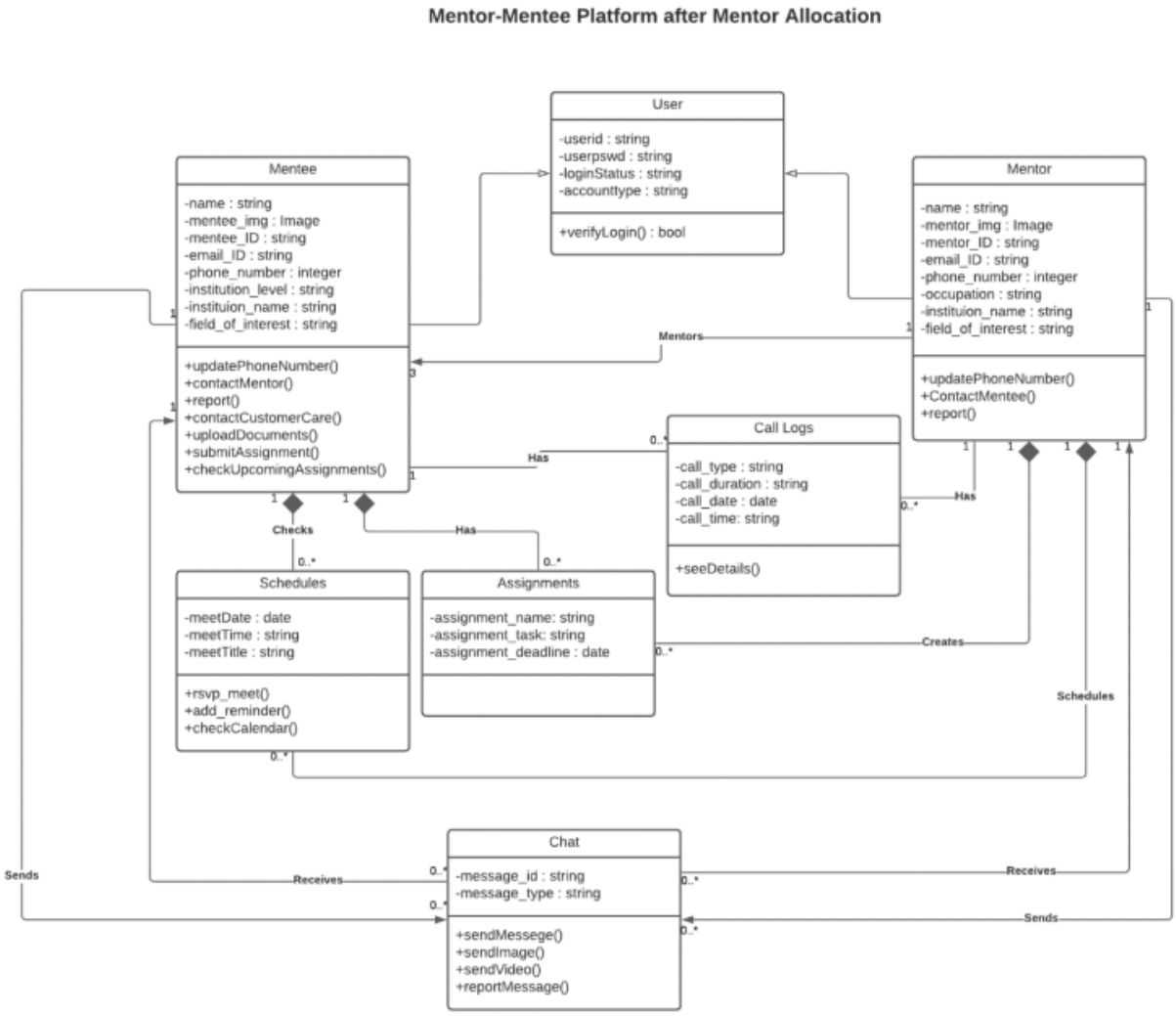


Display of Flagged Calls



Forgot password requires a phone number for OTP authentication

CLASS DIAGRAM FOR THE PLATFORM



CONCLUSION

The world today is filled up with competitions in every field. It is not enough to be good at something anymore. Along with the skills of being efficient in a task, one has to be challenging and impulsive towards their goals. Society has converted the world into a global race of humanity, seeking for the best of the bests.

Within this highly escalated world and busy work-life schedules, the young students tend to follow what the society expects them to, later on regretting their decisions and ultimately living out a stressed-out life. Our goal is simple to be honest – make the youth confident about their choices and decision. To make them strong mentally and emotionally to face the practical hardships and make them aware about the working of society, the corporate world, and ultimately the world they will ben entering into after their education is completed. W

We want every child out there to understand the nothing comes without hardships and hard work. One may be interested in computer science but as they progress into their college lives, they might as well tend to shift away from this interest and move towards something they realised they are meant for. These are the kind of situations and scenarios we want to prepare the youth for. The only constant in today's world is CHANGE. We aim to train our mentees to adapt to changes and make the best out of what they have at the moment. We believe in

"EACH ONE TEACH ONE"

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2. https://www.epw.in/journal/2021/42/special-articles/global-unemployment-and-inequality-during-1991.html
3. https://www.bloomberg.com/news/articles/2021-11-01/india-unemployment-rate-rises-in-october-on-rural-joblessness
4. https://www.bloomberg.com/news/features/2021-11-11/where-hs-unemployment-risen-6-young-workers-reveal-global-struggles
5. https://slideplayer.com/slide/12968617/
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7. https://www.clarifai.com/models/nsfw-model-for-content-detection
8. https://github.com/deepanshu-yadav/NSFW-Classifier
9. https://github.com/AditiRavi/Hate-Speech-Recognition
10. https://medium.com/ai-techsystems/hate-speech-and-offensive-language-detection-3d85b5f5ec4a