



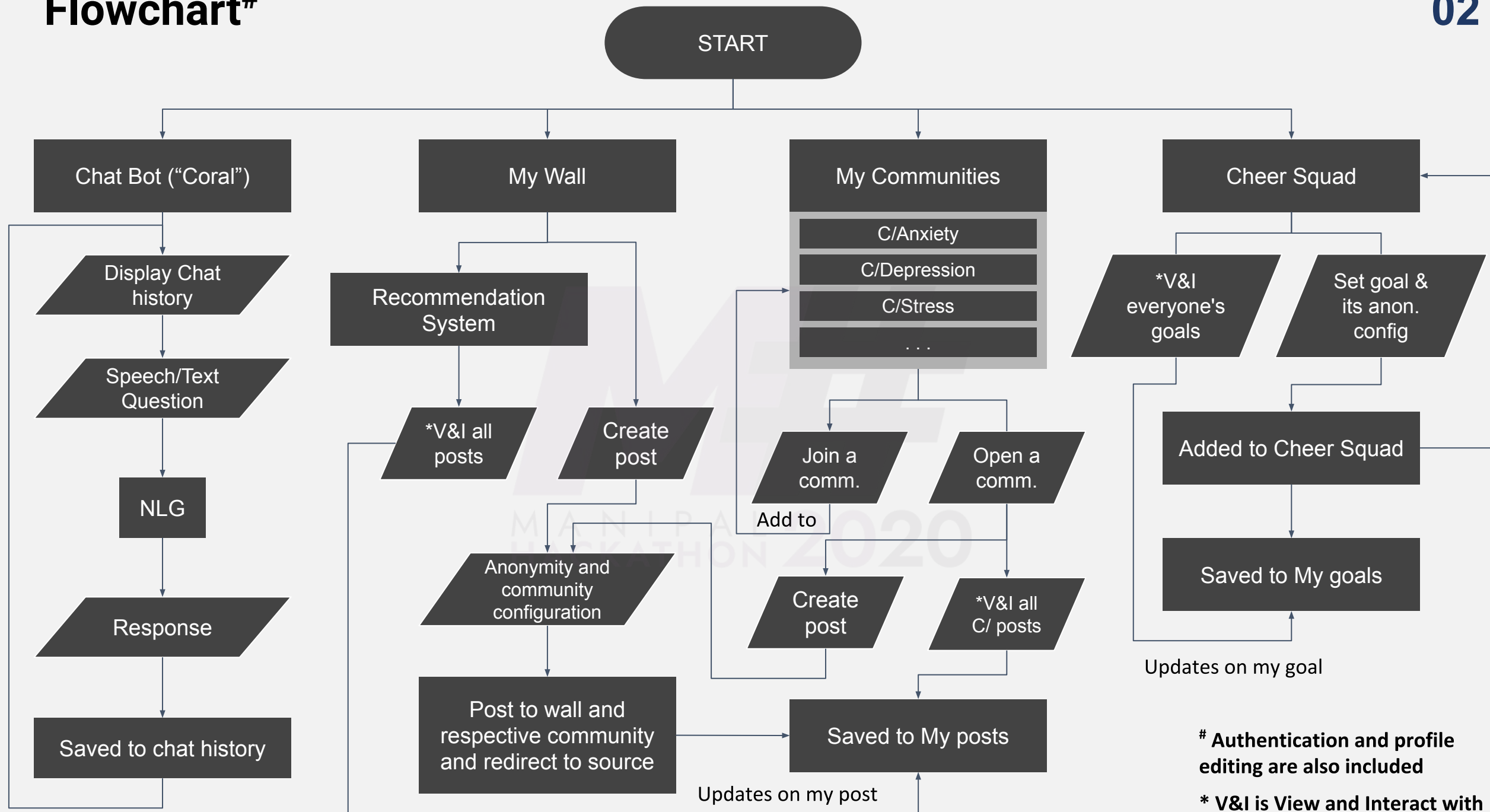
MANIPAL INSTITUTE OF TECHNOLOGY
MANIPAL
(A constituent unit of MAHE, Manipal)



Mental Health Care

Team: Ocean ID: 1180

Unlisted YouTube video:- <https://youtu.be/keqzEagBX9w>



Target Demographic

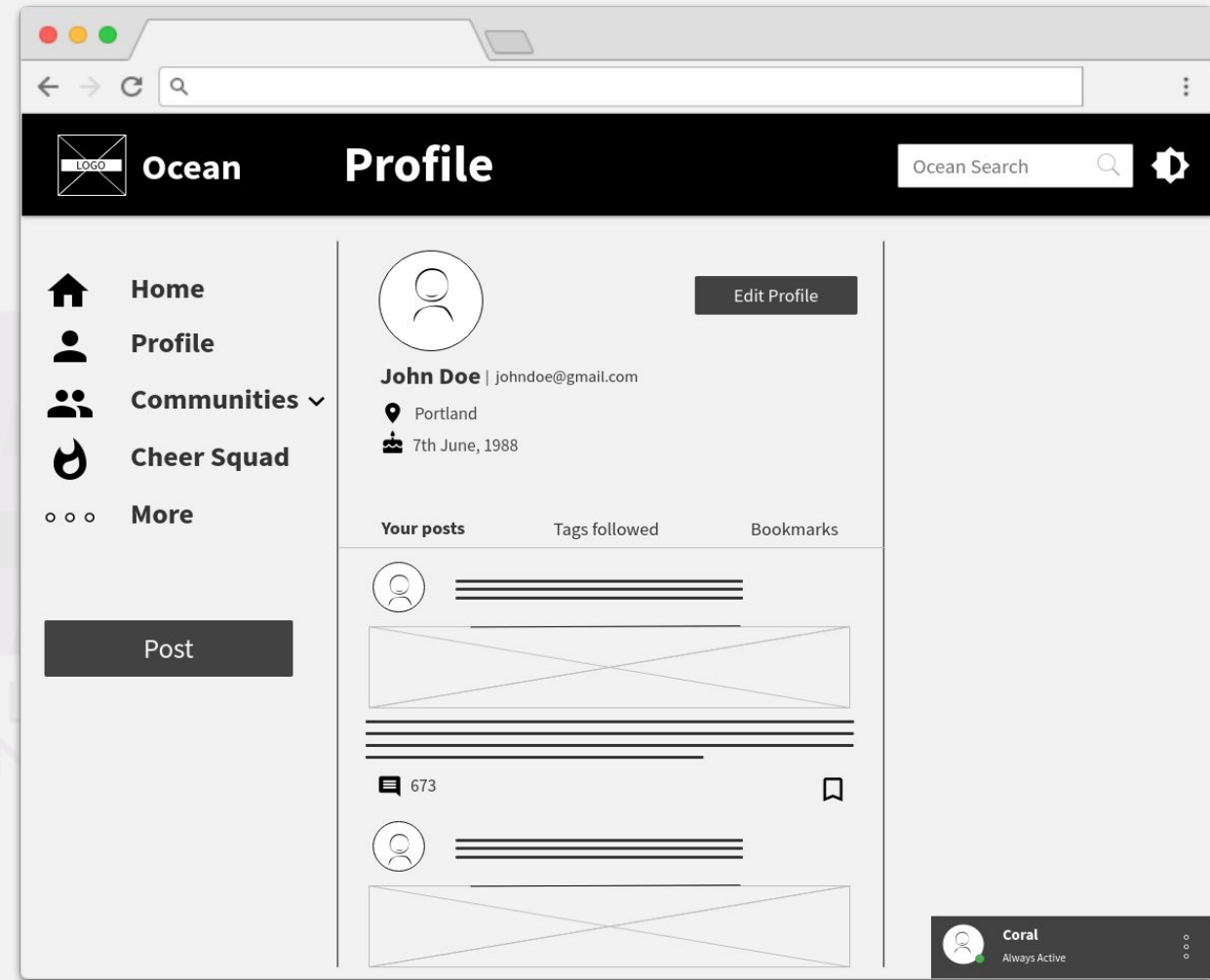
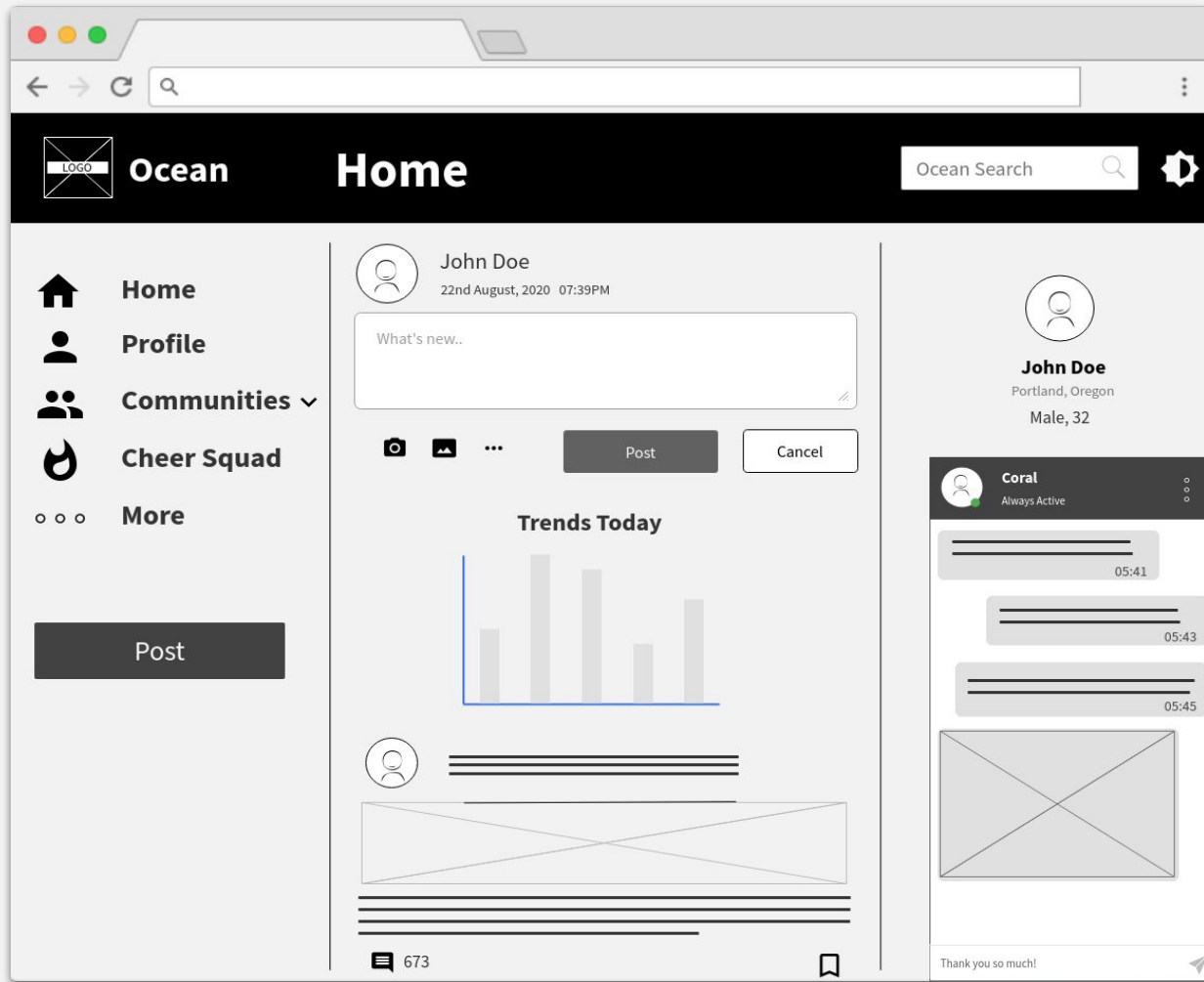
- Anyone who is **concerned** about mental health with respect to themselves, their close ones, or anyone **curious** in general can be a part of Ocean. This can be **anyone above 13** who can access the **internet**.

Use Cases

- Mental health related conversation/discussion is still **not a community exercise**. Ocean will create an **empathetic** social media community to make people more aware of mental health issues, normalizing them and making therapeutic content more accessible in general.
- It becomes extremely important to make users more **aware** about the topics they are actually interested in, and this can be done by employing a **personalized recommendation** engine to filter the right therapeutic content for each user.
- An empathetic and sensitive buddy-like chatbot("Coral") to converse in moments of weakness and crisis.

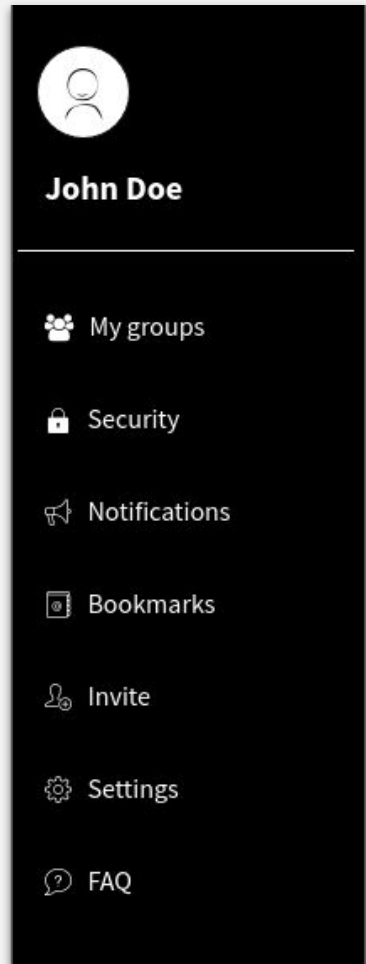
Impact

- A sensitive, aware and a **compassionate** social media community provides a feeling of belonging, reinforcement and purpose to individuals suffering from mental health issues.
- Making therapy content, if not actual therapy, more **affordable** and **attainable**.
- Building a community of sensitive individuals who **don't look at mental health issues as taboo**.



UI/UX Frames

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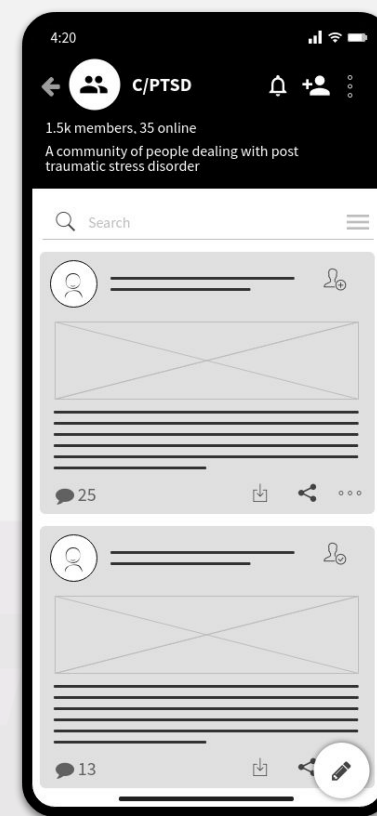


Sidebar



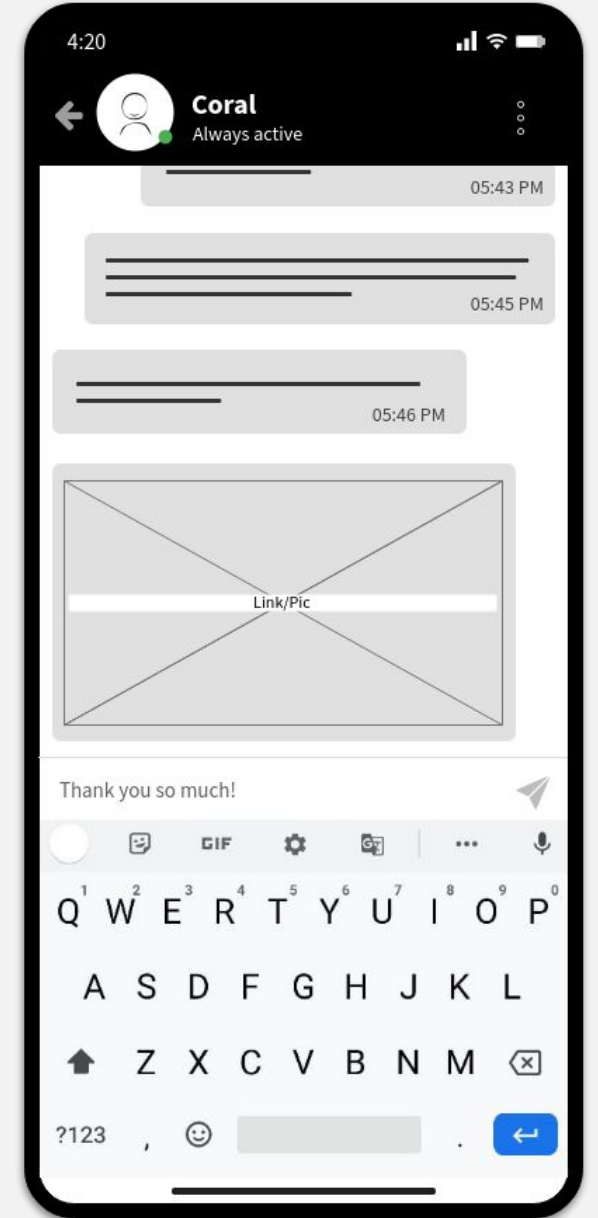
Home screen

Bottom navigation



Selected Community

Communities list



Chatbot Screen

- **Login and Signup**

Setting up a profile using proper authentication and permissions: the profile helps in maintaining a record and tracks the progress of the user.

- **Chat Bot (“Coral”)**

One of the key features would be an interactive chatbot for the users to talk to regarding their issues. Audio and text features will be used to recognize the emotions of the user and an NLG (Natural Language Generation) tool will be used to generate appropriate responses.

- **Channels**

Channel wise distribution and a Facebook like news feed on each channel where users can post, like, comment and interact with each other. Segregation of the user's posts into different channels will be done on the basis of the content and hashtags.

- **Cheer Squad**

An interactive feature where users can take up challenges and post it on their newsfeed so that others can view it and join in. This will also help other users to get motivated to overcome their challenges. There will also be a progress tracker for anyone who takes up the challenge.

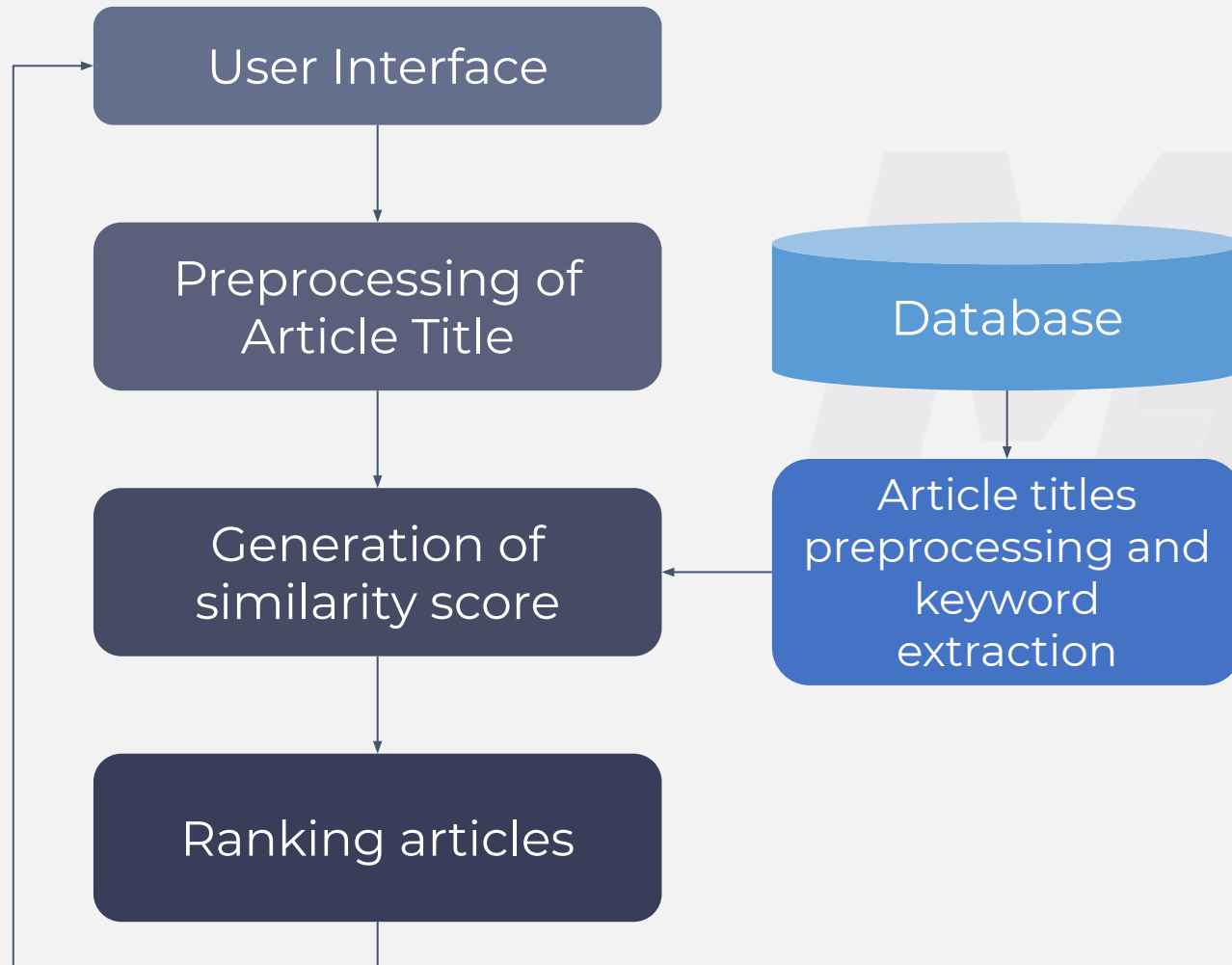
- **Information Panel / Dashboard**

In this section users can witness the kind of progress they have made in a quantitative manner, look back at posts they found insightful and informative and also keep a track of all the developments in mental science.

- **Anonymity**

This feature would allow the user to interact with others and share their thoughts, experiences and feelings without the pressure of having their identity revealed.

Keyword Indexing

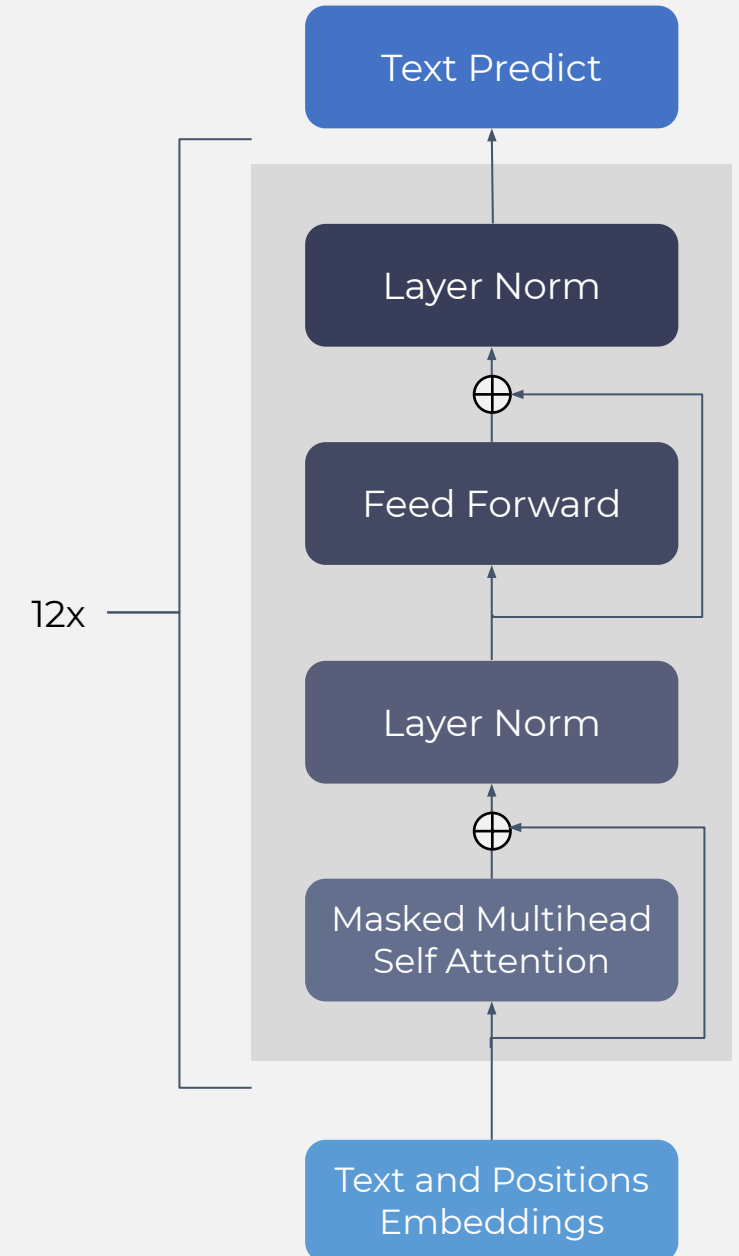


- Employing a personalized topic based recommendation engine, Ocean allows each user to choose from a plethora of mental health and self help topics like anxiety, spirituality and many more at sign up.
- Relevance of posts in the personalized feed would be determined by a number of factors like preferences, date of posting, likes and comments on the post etc.
- Posts similar to the one being currently viewed would be suggested to the user by using a combination of Keyword-Indexing, Cosine Similarity and Levenshtein Distance.

Algorithms Used

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- The Neural Dialog Generation Tool we propose makes use of a dialogue generative pre-trained transformer (DialoGPT), trained on 147 Million conversation-like exchanges extracted from Reddit comment chains over a period spanning from 2005 through 2017.4
- We make use of a pre-trained transformer model rather than a pre-trained RNN Variant, because transformers make use of self-attention to calculate word-encodings and also make use of a parallel architecture which allows faster training.
- The model is fine tuned on the “Empathetic Dialogues” dataset by Facebook AI Research.
- Coral is capable of holding empathetic conversations in emotional situations and acting as a “compassionate buddy” in moments of crisis.



Technologies Used

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Pytorch

DL framework for NLP



Spacy

Open source library for NLP



NLTK

Suite of libraries for NLP



Google Speech API

Text-to-speech or vice versa



Azure

Cloud computing service



NGINX

Reverse proxy server



Gunicorn

Python WSGI HTTP server



React Native

Mobile app framework



Nativebase

UI framework for React Native



Expo

SDK for React Native



React

JS library for building UIs



Material UI

UI framework for React



Django Rest Framework

RESTful API development



SQLite

Lightweight RDBMS

User's S/W and H/W requirements:

- Browser supporting HTML5 and JS
- Android Lollipop (5)+ or IOS 10+
- Devices supporting above requirements

Server S/W and H/W:

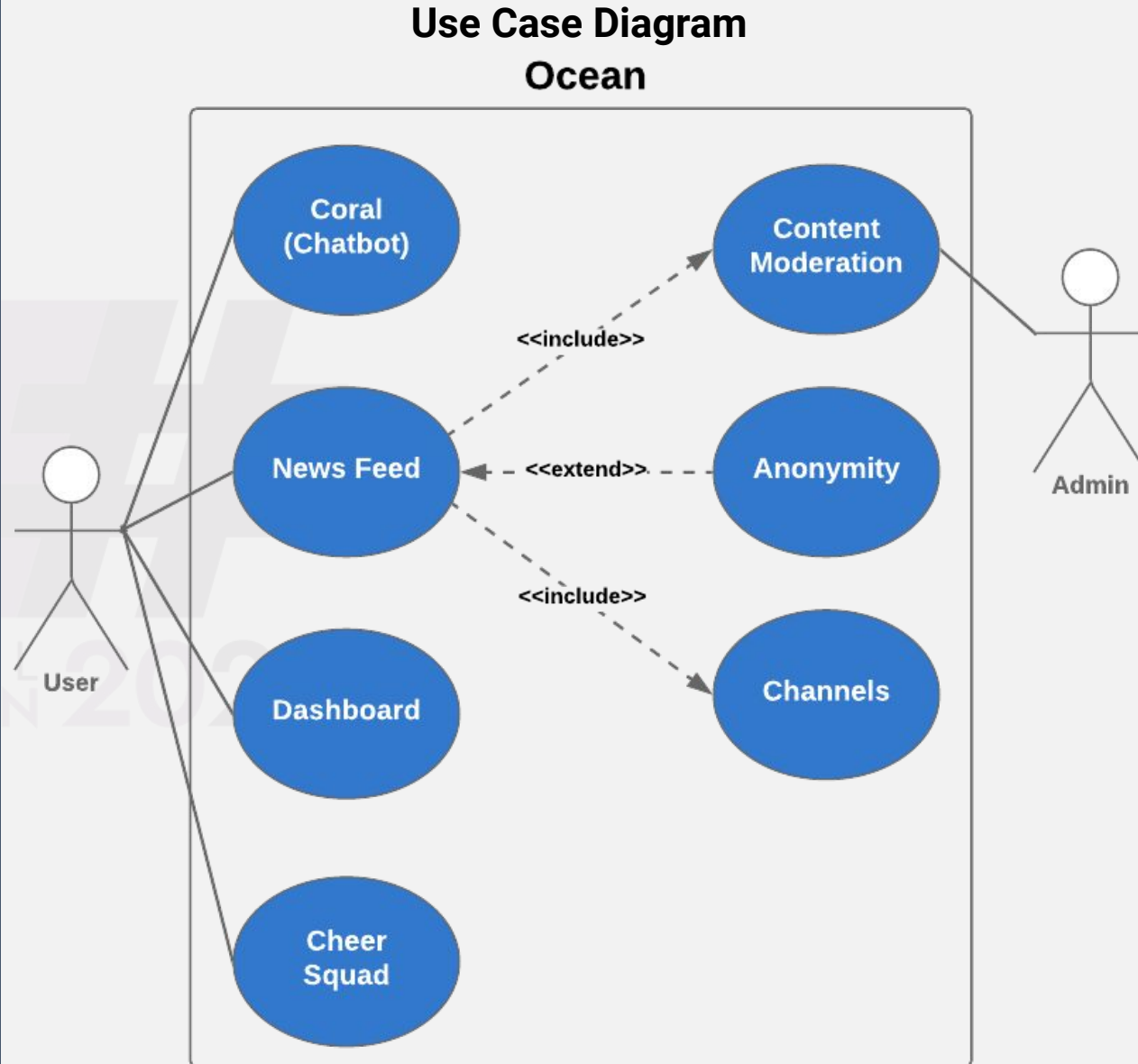
- Nvidia TESLA K80 (GPU)
- Azure B2ms VM with
 - 2 vCPUs
 - 8GB RAM
 - 1920 MAX IOPS
 - 16GB storage
 - 4 data disks
 - Ubuntu 18.04 LTS

May scale up according to requirements

Subscription used:

- Azure for students (free credits worth \$100)
- Google Speech API (free credits worth \$300)

- No social media platform is dedicated **exclusively** to mental health like Ocean. In fact, traditional social media may also create quite the opposite effect in many ways. There have not been many social media platforms which have empathy, compassion and serious moderation of content as their backbone and that is something we intend to achieve.
- Unlike any other platform, Ocean **prioritises** content over creators. Eliminating the concept of followers/friends and enabling anonymity drives focus towards WHAT is being talked about rather than WHO is talking.
- The kind of **empathetic** interaction provided by Coral is probably unprecedented in both the social media space and otherwise.



1. <https://arxiv.org/pdf/1911.00536.pdf>
DIALOGPT : Large-Scale Generative Pre-training for Conversational Response Generation
2. <https://arxiv.org/pdf/1811.00207.pdf>
Towards Empathetic Open-domain Conversation Models: a New Benchmark and Dataset
3. https://cdn.openai.com/better-language-models/language_models_are_unsupervised_multitask_learners.pdf
Language Models are Unsupervised Multi-task Learners
4. <https://papers.nips.cc/paper/7181-attention-is-all-you-need.pdf>
Attention Is All You Need
5. <http://ciir.cs.umass.edu/pubfiles/ir-318.pdf>
Statistical Language Modeling For Information Retrieval



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Thank You

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