Health and Wellness survey

Group 8 partnered with CogniXR

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cogni XR HEALTH

Easy-to-use HIPAA-compliant platform.

Product Head
Emmanuella Michel

Hypothetical Case Study: LIZA

Step 1

Visit mental health clinic

Fill in assessment form

Hypothetical Case Study

Step 2

Report review by the therapist

Hypothetical Case Study

Step 3

Report: Depression and anxiety issues

Hypothetical Case Study

Step 4

More efficient intervention and
assessment saving time.

Problem Statement

- Identifying of potential therapy candidates is subjective and time consuming

- Incomplete self mental health evaluations, high-Cost treatment

- Lack of automated data driven model for effective treatment plan

Objectives

- Prepare a psychometric questionnaire through which severity can be calculated

- Develop an Application which can be used to create any questionnaire and generate a summary report (sent to the therapist)

Big Idea

- A data driven approach to determine the severity of treatment.
- A competitive edge to reduce time consumption for filtration of patients

First Dataset

- From the psychometric questionnaire prepared

- Insights of demographic information, behavioral information of clients

- Csv data of 73 rows, 93 columns

QUESTIONNAIRE DEMO

Health and Wellness Survey

We are interns from St. Clair College in Data Analytics for Business program working at Cogni XR Health by Cognicorp-Therapy Inc. We are looking for participants to take part in a short survey regarding health and wellness.

The purpose of the survey is to understand the reason behind the need for therapy and on-demand sub-guided solutions to improve your mental wellness with Cogni XR health platform

What is Cogni?
Cogni is an easy-to-use HIPAA-compliant platform that mission is to expand the reach of mental health care so that wellness programs and health care providers support more people on their recovery journeys without delay.

to understand the need of individuals who are facing challenges with their mental health or related to their ould appreciate it if you could take the time to answer this survey. Please note that your answers are and the data collected is anonymized so your personal information will not be shared. This will only be used
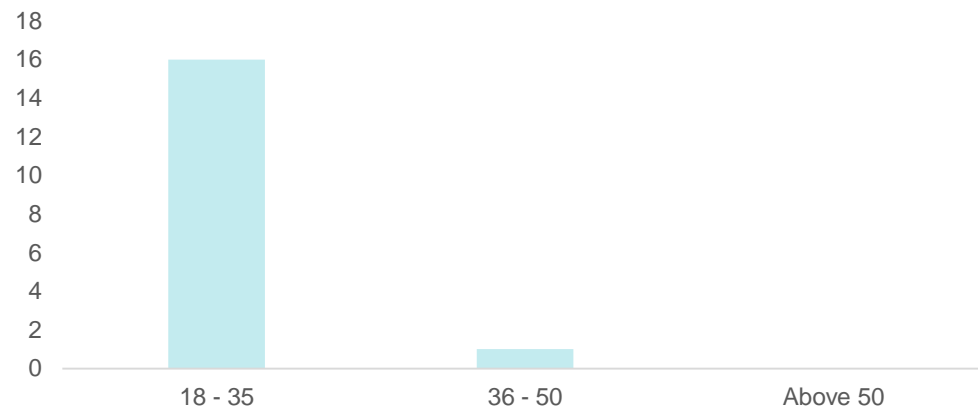
Second Dataset

- The SAMSum dataset contains 16369 real-life conversations reflecting their daily life.
- The dataset consists of three columns and 16369 rows. The columns are: Dialogue, Summary, Id.
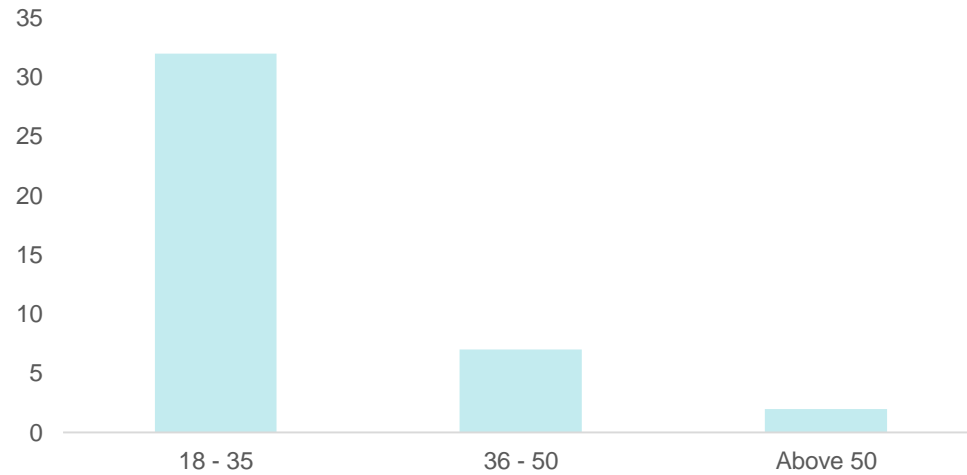
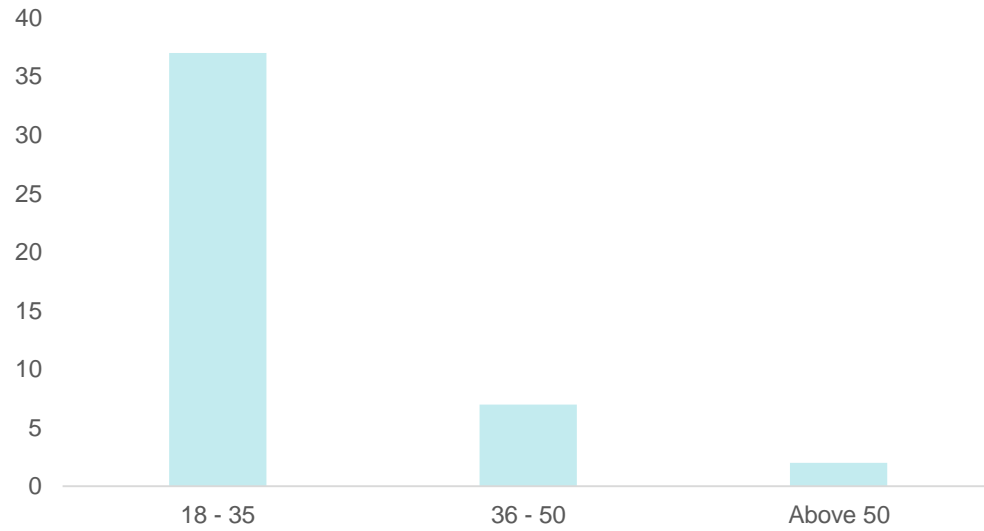| Training Samples	Testing Samples	Validation Samples
14,732	819	818

EDA

Experienced symptoms based on age group

Therapist support based on age group

Comfortable treatment based on symptom experience

Legend: No, Yes

	No	Yes
Value	2	10
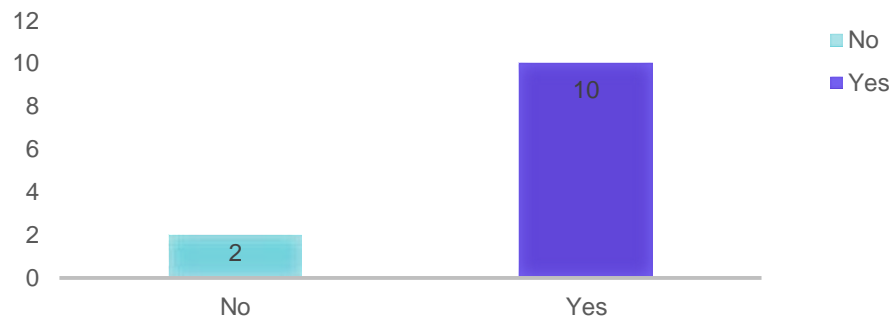
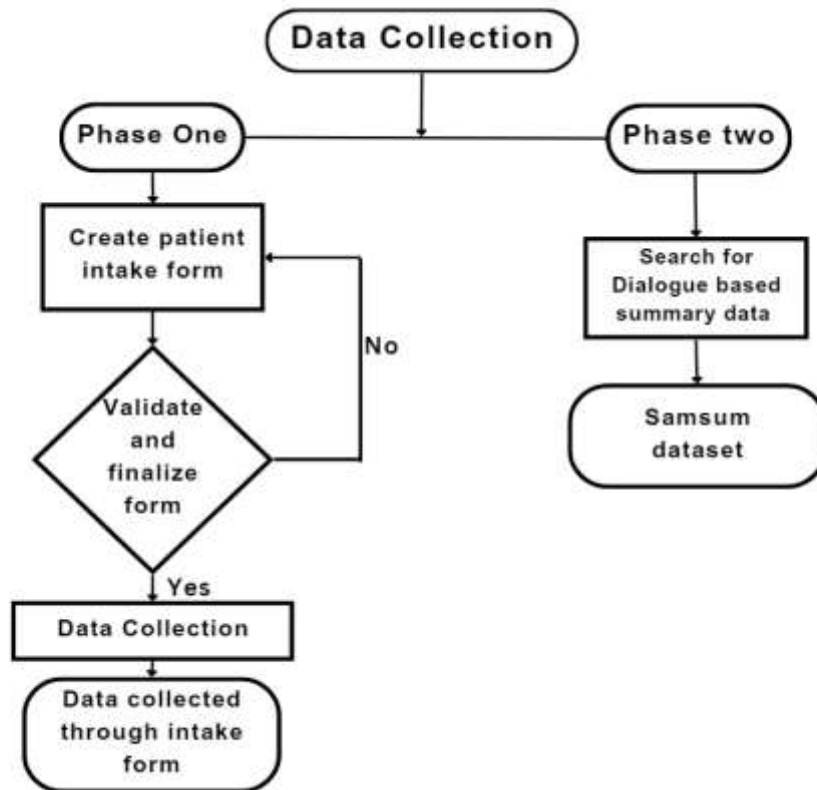# Methods/Actions Taken

Step 1 : Data collection

Step 2 : Clustering

Step 3 : Mathematical Model

Step 4 : Summarization

Data Collection

Phase one desired output

Was to find severity based on the questions
(first dataset) and to provide summarization of
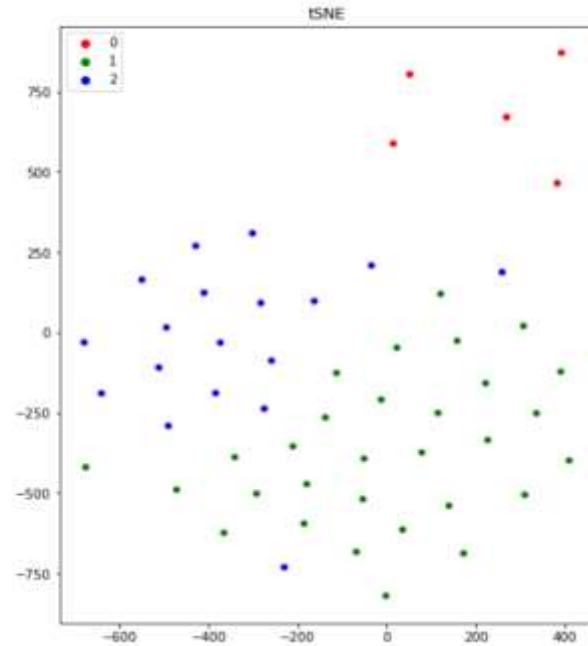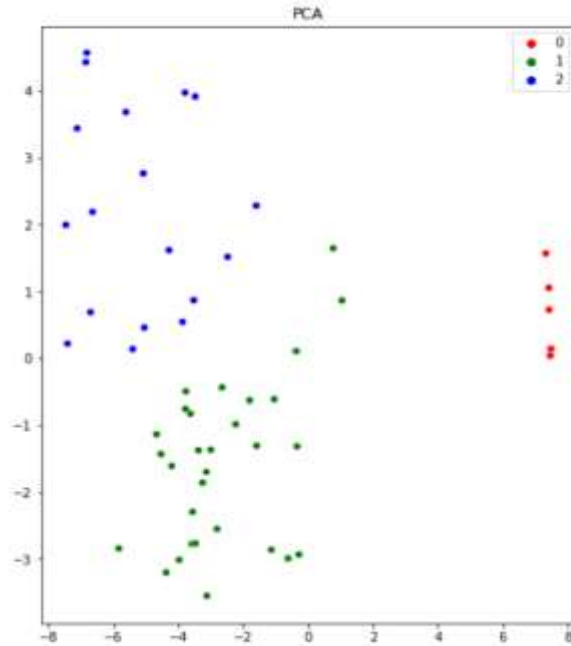the questionnaire data in email

- Red (Highly severe)
- Yellow (Moderate)
- Green (Low severity)

Clustering

- Used different clustering methods to group the data
- Tried different clustering methods like DBscan, K-means, Hierarchical-Agglomerative
- Silhouette score was good for K-means clustering

K-Means Clustering

Clustering

therapist_support_anxiety	daily_affect_anxiety	goals_anxiety	expectations_anxiety	relationship_changes_anxiety	sleep_impact_anxiety	sleep_patterns_anxiety
NaN	NaN	NaN	NaN	NaN	NaN	NaN
Adequate	Prone to more isolation	To help me relax;To have better relationships;...	To feel relax;To learn coping strategies;To fe...	No not at all	Quite a bit	Quite a bit
Adequate	Prone to more isolation	To help me relax;To smile again;To have better...	To feel relax;To learn coping strategies;To ha...	No in other environments	Quite a bit	Quite a bit
NaN	NaN	NaN	NaN	NaN	NaN	NaN
NaN	Prone to more anger	To help me relax;To smile again;To have better...	To feel relax;To learn coping strategies;To ha...	Yes mostly with my friends	Moderately	Moderately
Haven't been to therapy	Prone to more grief	To help me relax;To smile again;To have better...	To feel relax;To learn coping strategies;To ha...	Yes mostly with my friends	Extremely	Quite a bit

Clustering showed mixed data, so it did not work as intended.

Mathematical Model

- Each answer choice is given a score

- Scores are added together to determine severity

- Words like suicidal, suicide, murder, 911, urgent directly flag response as severe.
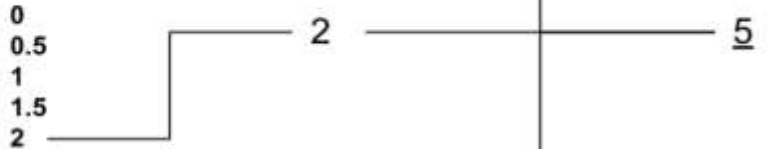
Mathematical Model

Q. When was the last time you have experienced symptoms of Anxiety?

   a.   < 1 month   2
   b.   < 3 months   1.75
   c.   < 6 months   1.5
   d.   < 1 year   1.25
   e.   > 1 year   1
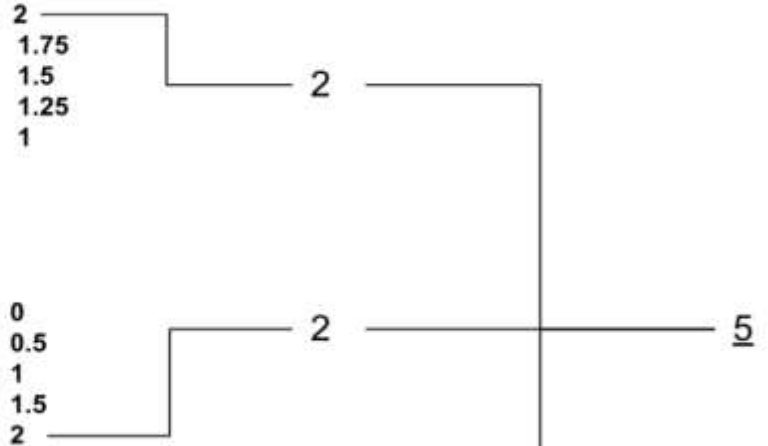
Q. Has it affected your sleep pattern?

   a.   Not at all   0
   b.   A little bit   0.5
   c.   Moderately   1
   d.   Quite a bit   1.5
   e.   Extremly   2

Q. What are your expectation from that treatment?

   a.   To feel relaxed   0.5
   b.   To learn coping strategies   0.5
   c.   To have better relationships   0.5
   d.   To feel better at work or school   0.5
   e.   To be happy   0.5

2

2

1

5
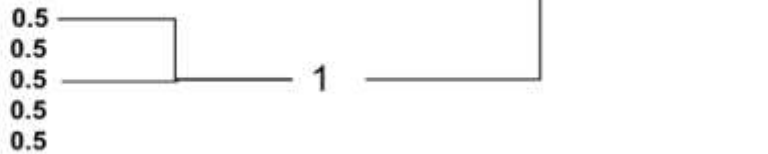
Phase two desired output

To provide summarization of any kind of form data.

Summarization

- BART model was trained again in SAMSum dataset, with early stopping.
- The evaluation metrics used include loss and ROUGE scores for both validation and test set.

Validation Loss	Rouge1	Rouge2	Gen Len
1.437623	41.537	21.121	60.16

Application demo

QUESTIONNAIRE EDITOR

CogniXR Questionnaires

Create New

Title	Last Updated	Associated Emails	Actions
Work Stress Questionnaire	21 April, 2023	W0781762@myscc.ca		Copy Link	View	Edit	Delete
Health and Wellness Survey	21 April, 2023	W0766698@myscc.ca		Copy Link	View	Edit	Delete

QUESTIONNAIRE

Work Stress Questionnaire

1. **What is your name?** *

   Tina

2. **What is your age?** *

   26

3. **What is your job role?** *

   Business Data Analyst

4. **Do you feel overwhelmed by your work?** *

   ◯ Not at all

   ◯ A little bit

   ◯ Moderately

   ⦿ Quite a bit

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Work Stress Questionnaire Response Summary

- Tina works as Business Data Analysis
- She feels overwhelmed by her work and stressed about her work
- Tina's organization has a mental health counselor
- Tina would like to seek help from mental health expert if she feels she cannot balance work and personal life
- Tina is not comfortable with talking about her well-being with her team or manager

Work Stress Questionnaire Résumé de la réponse

- Tina travaille dans l'analyse des données d'entreprise
- Elle se sent dépassée par son travail et stressée par son travail
- L'organisation de Tina a un conseiller en santé mentale
- Tina aimerait demander l'aide d'un expert en santé mentale si elle sent qu'elle ne peut pas concilier travail et vie personnelle
- Tina n'est pas à l'aise de parler de son bien-être avec son équipe ou son manager

Note: This content is generated using BART, a Large Language Model. This content is not moderated and might be offensive, repetative or might contain additional information generated by AI.

About CogniXR

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Ask us a question

Summary Report

Work Stress Questionnaire Response Summary

- Tina is a data analyst
- She feels overwhelmed by her work and stressed about her work situation
- Tina doesn't feel comfortable talking about her mental health issues with her team or manager
- She doesn't want to seek help from a mental health expert
- "I can't balance my work and personal life"

Work Stress Questionnaire Résumé de la réponse

- Tina est analyste de données
- Elle se sent dépassée par son travail et stressée par sa situation de travail
- Tina ne se sent pas à l'aise de parler de ses problèmes de santé mentale avec son équipe ou son manager
- Elle ne veut pas demander l'aide d'un expert en santé mentale
- "Je n'arrive pas à concilier mon travail et ma vie personnelle"

Note: This content is generated using BART, a Large Language Model. This content is not moderated and might be offensive, repetative or might contain additional information generated by AI.

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Assumptions made

- Mathematical scoring is correct.
- Severity determined by total score added.
- Questions and Answers as a conversation.
- Translation does not cause data loss.

Biases to address

- Missing out on useful data
- No filtration of offensive content
- Chances of creating duplicate sentences to fulfill minimum word criteria

Challenges

- Summarization bias
- Inaccurate categorization of patients
- Scoring model may give unintended output

Next steps

- Summarization with severity
- Similar to sentiment Analysis

References

- samsum · Datasets at Hugging Face. (2023). Retrieved 22 March 2023, from https://huggingface.co/datasets/samsum

- Lewis, M., Liu, Y., Goyal, N., Ghazvininejad, M., Mohamed, A., & Levy, O. et al. (2019). BART: Denoising Sequence-to-Sequence Pre-training for Natural Language Generation, Translation, and Comprehension. Retrieved 18 March 2023, from https://arxiv.org/abs/1910.13461

- (2023). Retrieved 22 March 2023, from https://aclanthology.org/W04-1013.pdf

- Facebook/Bart-Large-CNN · hugging face. (n.d.). Retrieved March 22, 2023, from https://huggingface.co/facebook/bart-large-cnn

Thank you!