Bright Mind Lab

Pitch Presentation

PROJECT 5

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Introduction

An Experimental Website
to transform negative thought patterns
through cognitive reframing

Collect a dataset
negative thoughts & corresponding positive reframe

↓

Training language models
automatically reframing negative thoughts

↓

Potentially enhancing mental health
interventions and support systems

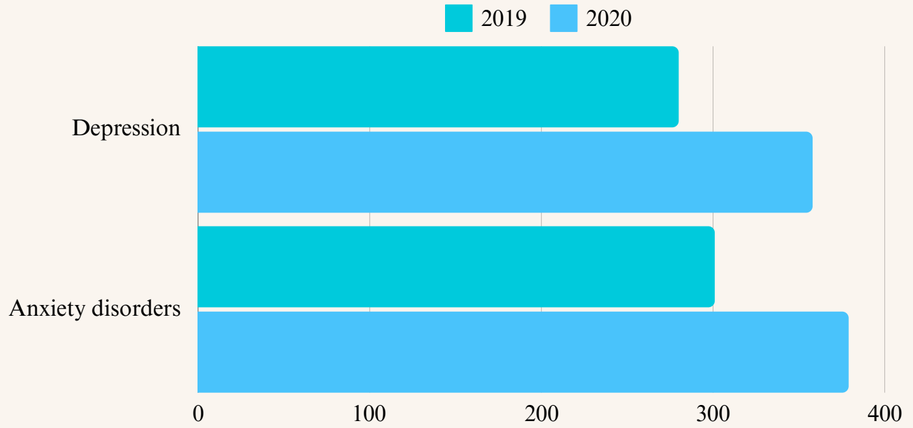
Background

——The prevalence and impact of mental health problems

- In 2019, 1 in 8 people (or **970 million** people) worldwide lived with a mental disorder.
- Approximately **280 million (3.7%)** people worldwide suffer from depression, and around **301 million(3.8%)** people are affected by anxiety disorders.

(Institute of Health Metrics and Evaluation, 2024)

The number of people suffering from anxiety and depression has increased significantly in 2020 due to the COVID-19 pandemic (World Health Organization, 2022).



More than **700,000** people die by suicide every year. Suicide is the fourth leading cause of death among people ages 15-29.

COVID-19: Scientific briefs, Mental Health and COVID-19: *Early evidence of the pandemic's impact: Scientific brief, 2 March 2022*, World Health Organization, viewed 19 March 2024, <https://www.who.int/publications/i/item/WHO-2019-nCoV-Sci_Brief-Mental_health-2022.1>

Global Health Data Exchange (GHDx), *GBD Results*, IHME GHDx, viewed 19 March 2024, <https://vizhub.healthdata.org/gbd-results/>

Background

What is Cognitive Restructuring and Cognitive Behavioral Therapy (CBT)?

Challenges of traditional cognitive reconstruction technology

Resource limitations
High costs
Difficulty of access
Privacy and stigma

Advancements in CBT through the Introduction of AI Technology

Accessibility and Availability
Immediate Feedback and Support
Large-scale Data Analysis
Cost-effectiveness
Privacy and Anonymity

Project Mission

—Data Challenges in AI for Cognitive Reframing

- IT tools shortage for data acquisition in psychological research(Dave et al. 2022, p. 114).
- AI training's fundamental need: extensive datasets(Pereira et al. 2021, p. 827).
- Cognitive reframing AI models' significant need for targeted, high-quality data(Ewbank et al. 2020, p. 36).

Research institutions struggle to improve AI for cognitive reframing because they lack specific data for their studies.

Dave, R, Sargeant, K, Vanamala, M & Seliya, N 2022, 'Review on Psychology Research Based on Artificial Intelligence Methodologies', Journal of Computer and Communications, vol. 10, no. 5, pp. 113–130.
Pereira, T, Morgado, J, Silva, F, Pelter, MM, Dias, VR, Barros, R, … Oliveira, HP 2021, 'Sharing biomedical data: Strengthening ai development in healthcare', Healthcare (Basel), vol. 9, no. 7, pp. 827-839.
Ewbank, MP, Cummins, R, Tablan, V, Bateup, S, Catarino, A, Martin, AJ & Blackwell, AD 2020, 'Quantifying the Association Between Psychotherapy Content and Clinical Outcomes Using Deep Learning', *JAMA Psychiatry (Chicago, Ill.)*, vol. 77, no. 1, pp. 35–43.

Project Mission

Our Solution: A Web Platform for Data Collection

- Designed to meet the research needs for AI and cognitive technique advancement
- Highly customizable surveys with multiple-choice, single-choice, and open-ended response options.
- Standardized data storage for streamlined management and data export for AI training.

Project Approach

Web

Simplified User Management

Enhance user experience with streamlined registration and login processes.
Intuitive interface design ensures ease of use, increasing participation in surveys.

Data Collection

Conduct surveys to gather data on negative thoughts.

Data Security and Privacy

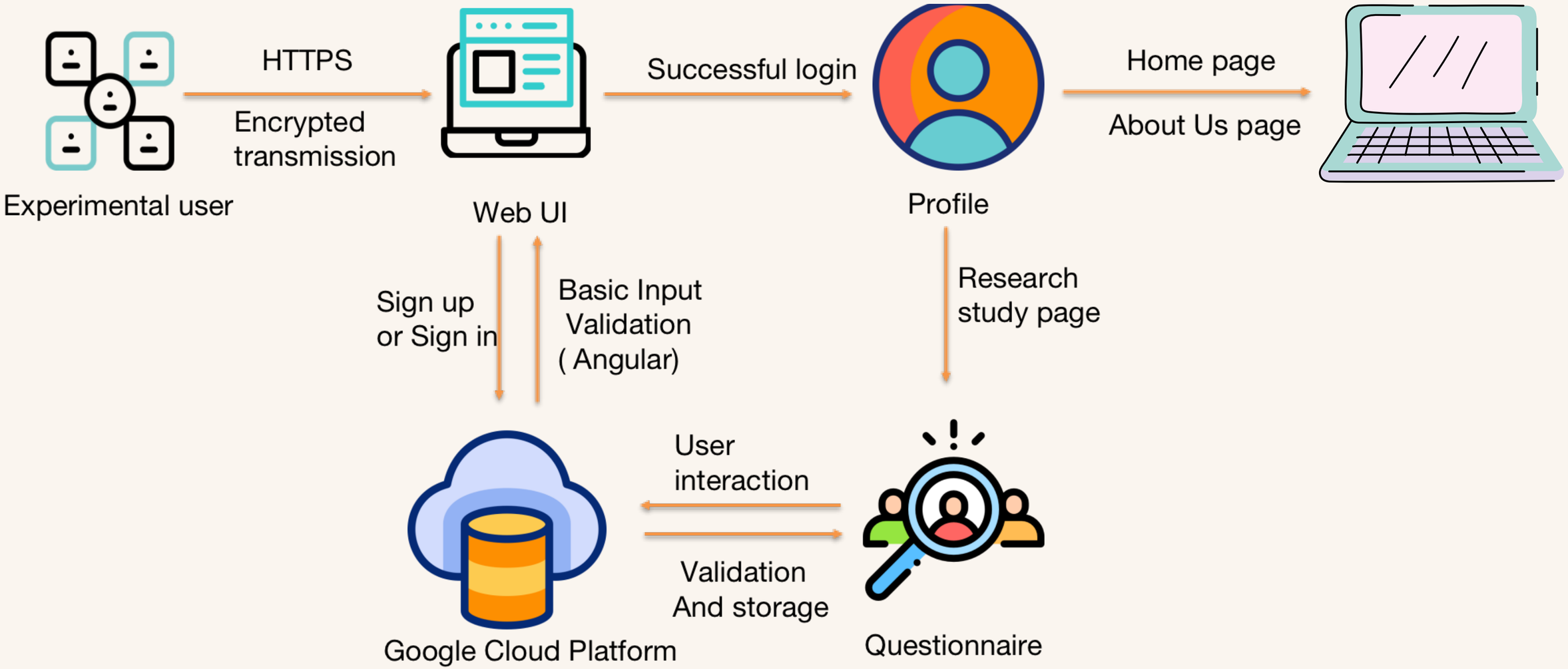
Implement HTTPS, input validation, and encrypted storage to protect user data.

Data Management

Use Firebase for data storage and management with an easy-to-use interface.
Enables regular backups for high-quality datasets for AI model training.

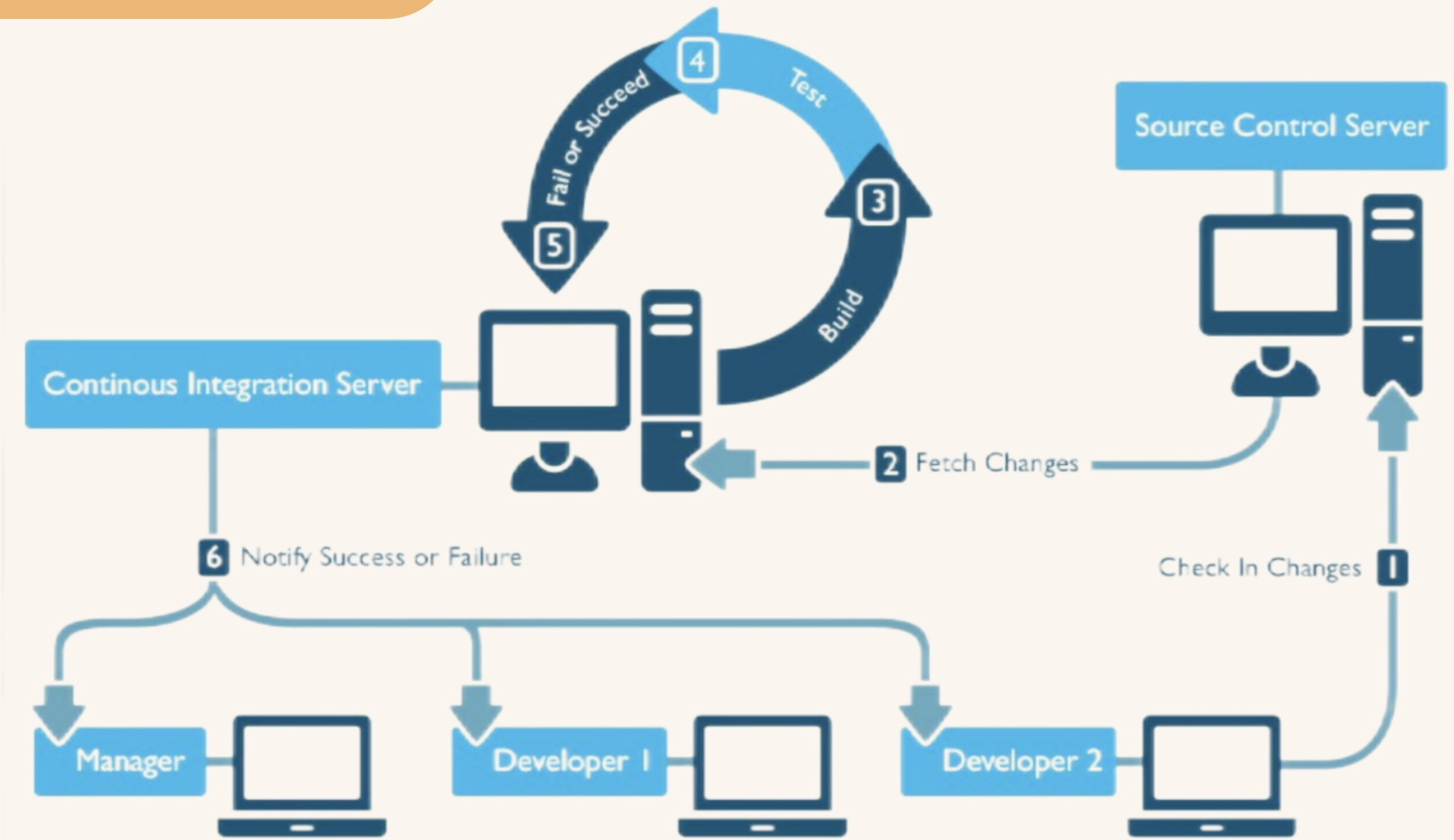
Project Function

How to do



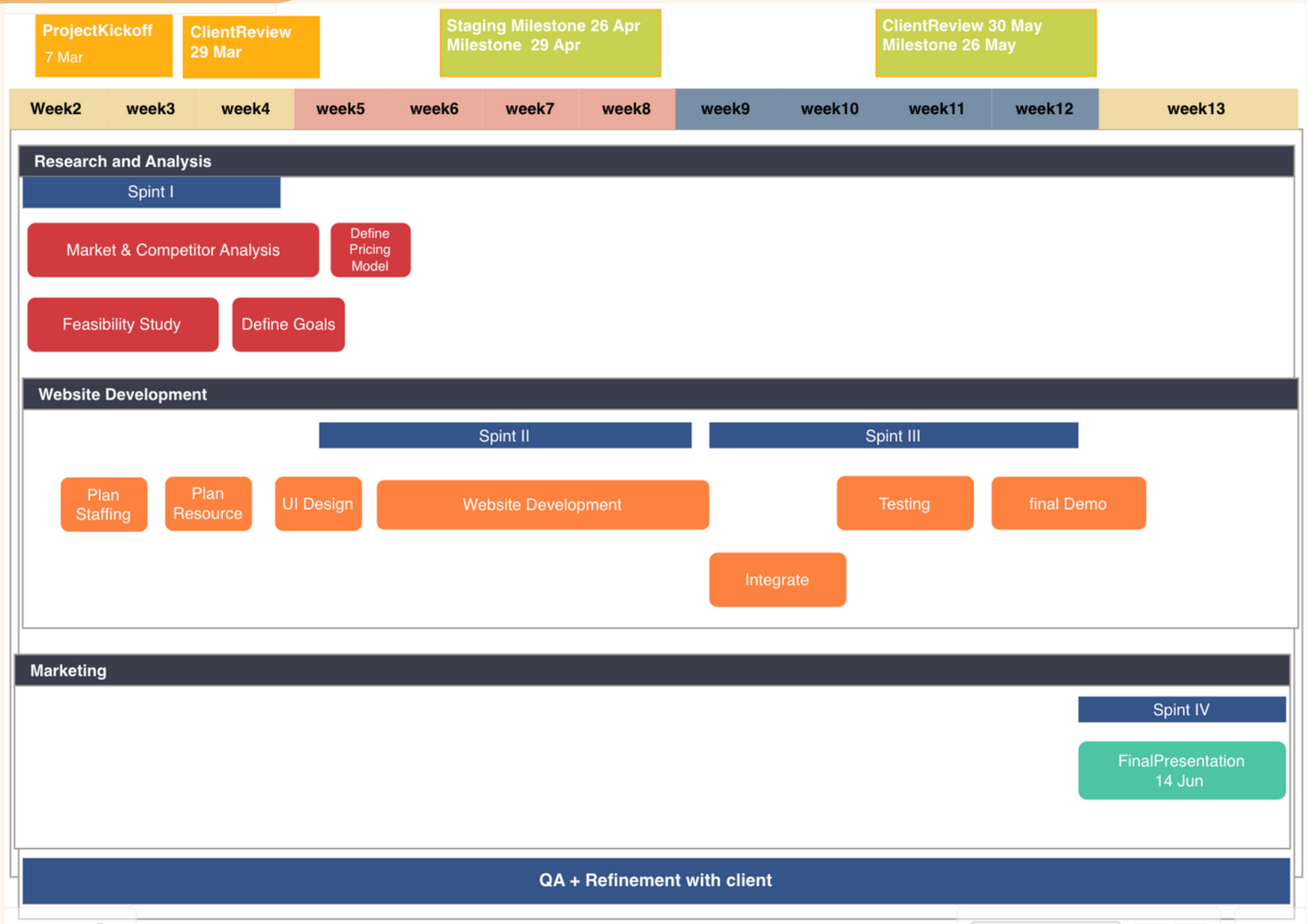
Project Function

——Roles and Process



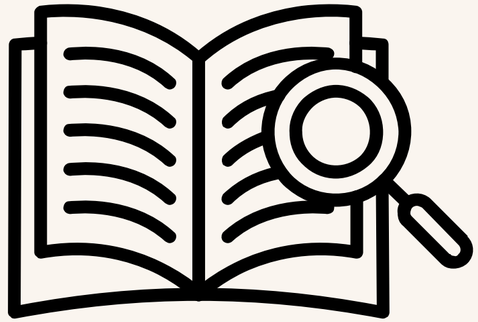
Project Function

Project Schedule



Significance

- Cognitive restructuring is an important part of psychotherapy.



- **Supporting research**: this platform will provide researchers with a large number of examples for analysing negative and positive thought patterns, providing empirical support for cognitive behavioural therapy and other psychotherapies.

- **Education and Training**: Psychology students and junior clinical psychologists can use this platform to practice identifying and transforming negative thoughts and enhance their clinical skills.

Significance

Dataset → **Training Models**

- The dataset can help train more accurate and empathetic language models, and the trained models may be more accurate at identifying negative thoughts

- The trained model can be used for research in the psychological profession.

- Interact directly with individuals in need of help and get mental health help at a lower cost.

Summary

Objective: Create a platform to transform negative thought patterns using cognitive reframing, leveraging AI technology.

Method: Conduct experiments with clinical psychologists and psychology students to collect negative thoughts and their positive reframes.

Goal: Build a dataset to train language models for automatic negative thought reframing.

Impact: Enhance mental health interventions and support systems.

Thanks for your watching!

References

COVID-19: Scientific briefs, *Mental Health and COVID-19: Early evidence of the pandemic's impact: Scientific brief, 2 March 2022*, World Health Organization, viewed 19 March 2024, <https://www.who.int/publications/i/item/WHO-2019-nCoV-Sci_Brief-Mental_health-2022.1>

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