MEET OUR TEAM

ALFAN FADHIL BAIHAQI (ALFAN)

RESEARCHER/ML ENGINEER

Portofolio - Github

I am interested in learning various programming languages and the latest technologies in software development.

"Talk less, Do more."

BINTANG NUR FIRDAUS (BINTANG)

ML ENGINEER/BACK-END

Linkedin - Github

I am interested in learning various programming languages and the latest technologies in software development.

"To overcome fear, you must become fear."

DARRYL NAUFAL ARDIAZ (RIL)

RESEARCHER/ML ENGINEER/WRITER

Linkedin - Github

I have a deep interest in technology, especially those related to programming and math. My favorite activity is problem solving on platforms like LeetCode.

"If you cannot do great things, do small things in a great way."

DIAN SAPUTRA (DAYEN)

DESIGNER/FRONT-END/WRITER

Linkedin - Github

I have an interest in design, whether it's mobile or web. Even so, sometimes I become a Full-Stack developer if that's necessary. Outside of informatics, I play games and music.

"If someone can, I feel happy for it"

TOPIC AND MOTIVATION

Koran reference:

لَّا يَسْـَٔمُ ٱلْإِنسَٰنُ مِن دُعَآءِ ٱلْخَيْرِ وَإِن مَّسَّهُ ٱلشَّرُّ فَيَـُٔوسٌ قَنُوطٌ

"One never tires of praying for good. And if touched with evil, they become desperate and hopeless."
Surah Fussilat - 49

Hadith reference:

Abu Hurairah (RA) narrated that the Messenger of Allah (SAW) said: "Whoever relieves a Muslim of a burden from the burdens of the world, Allah will relieve him of a burden from the burdens on the Day of Judgement. And whoever helps ease a difficulty in the world, Allah will grant him ease from a difficulty in the world and in the Hereafter. And whoever covers (the faults of) a Muslim, Allah will cover (his faults) for him in the world and the Hereafter. And Allah is engaged in helping the worshipper as long as the worshipper is engaged in helping his brother." (Jami` at-Tirmidhi 1930, Book 27, Hadith 36)

As the references we listed earlier have become our spiritual foundation in developing this application. We are here to ease someone's burden, especially in terms of mental health. We believe that mental health is as important as physical health, and everyone deserves access to quality services.

PROPOSED SOLUTION

One of the main concerns underlying this project is the lack of awareness in society about mental health, especially in the midst of bullying cases that continue to emerge every year. CakapSehat aims to address this issue by providing access to mental health consultation and support in the form of a chatbot accompanied by relevant verses from the Quran (optional).

This application is based on two main Sustainable Development Goals (SDGs): health and inequality.

Good Health and Well-being (SDG 3):

CakapSehat tackles this by providing increased access to mental health resources. By offering a mental health chatbot, CakapSehat makes consultation and support more accessible, especially for those who might face geographical or financial barriers to traditional therapy.

Reduced Inequalities (SDG 10):

Mental health issues can be significantly exacerbated by social and economic inequalities. CakapSehat helps address this by offering a potentially less expensive solution compared to traditional therapy, making mental health support more attainable for a wider range of people.

TARGET USER GROUP

+ EARLY ADULTS

Individuals in early adulthood typically experience major life changes such as marriage, parenthood, or career advancement, which can create significant stress and mental strain. This group of early adults also face increased work responsibilities and financial pressures to achieve stability, increasing the risk of anxiety and depression.
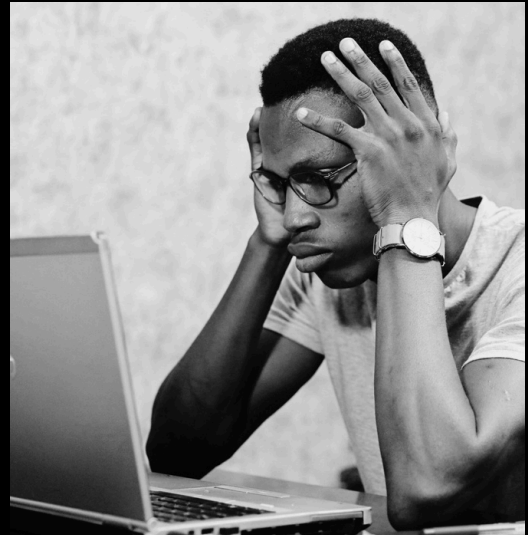
ADOLESCENTS +

Adolescents often face considerable academic and social pressures as they navigate significant life transitions such as adjusting to high school dynamics and preparing for future educational paths, which can lead to stress and anxiety. This period is also critical for identity formation, where self-exploration can lead to internal conflicts and increase susceptibility to mental health issues such as eating disorders, social anxiety, and depression.

RESEARCH QUESTIONS

HOW CAN A CHATBOT APPLICATION BE DESIGNED TO EFFECTIVELY SUPPORT USERS' MENTAL HEALTH BY PROVIDING PERSONALIZED SELF-CARE TIPS AND GUIDANCE?

HOW CAN AN EVALUATION OF THE EFFECTIVENESS AND SUCCESS OF CHATBOTS IN IMPROVING USERS' MENTAL HEALTH BE CARRIED OUT?

RESEARCH METHODOLOGY

LITERATURE REVIEW

CONDUCT A COMPREHENSIVE REVIEW OF EXISTING LITERATURE ON MENTAL HEALTH SUPPORT SYSTEMS, CHATBOT APPLICATIONS, AND AI IN HEALTHCARE. THIS WILL PROVIDE A FOUNDATIONAL UNDERSTANDING OF THE CURRENT STATE-OF-THE-ART AND BEST PRACTICES IN THE FIELD, ALLOWING FOR THE IDENTIFICATION OF GAPS AND OPPORTUNITIES FOR INNOVATION.

USER RESEARCH

CONDUCT SURVEYS, INTERVIEWS, AND USER TESTING TO UNDERSTAND THE NEEDS, PREFERENCES, AND CHALLENGES OF POTENTIAL USERS IN MANAGING THEIR MENTAL HEALTH. THIS QUALITATIVE APPROACH WILL PROVIDE INSIGHTS INTO THE USER EXPERIENCE AND EXPECTATIONS, HELPING TO TAILOR THE CHATBOT APPLICATION TO MEET USERS' NEEDS EFFECTIVELY.

DESIGN AND DEVELOPMENT

DESIGN THE CHATBOT APPLICATION'S USER INTERFACE, CONVERSATION FLOW, AND BACKEND ARCHITECTURE BASED ON THE FINDINGS FROM THE LITERATURE REVIEW AND USER RESEARCH. DEVELOP THE CHATBOT USING SUITABLE AI AND NATURAL LANGUAGE PROCESSING (NLP) TECHNOLOGIES, ENSURING A USER-FRIENDLY AND EFFECTIVE INTERACTION EXPERIENCE.

IMPLEMENTATION

IMPLEMENT THE DESIGNED CHATBOT APPLICATION, INTEGRATING IT WITH THE NECESSARY DATABASES AND EXTERNAL APIS FOR MOOD TRACKING AND SELF-CARE TIPS RECOMMENDATION. THIS PHASE WILL INVOLVE CODING, TESTING, AND REFINING THE APPLICATION TO ENSURE ITS FUNCTIONALITY AND RELIABILITY.

EVALUATION

CONDUCT USABILITY TESTING AND USER FEEDBACK SESSIONS TO EVALUATE THE EFFECTIVENESS AND USER SATISFACTION OF THE CHATBOT APPLICATION. USE METRICS SUCH AS USER ENGAGEMENT, USER RETENTION, AND TASK SUCCESS RATE TO MEASURE THE CHATBOT'S PERFORMANCE AND IDENTIFY AREAS FOR IMPROVEMENT.

RESEARCH METHODOLOGY

ANALYSIS

ANALYZE THE DATA COLLECTED FROM THE EVALUATION PHASE TO IDENTIFY STRENGTHS, WEAKNESSES, AND AREAS FOR IMPROVEMENT IN THE CHATBOT APPLICATION. USE THIS ANALYSIS TO REFINE THE APPLICATION AND ENHANCE ITS EFFECTIVENESS IN SUPPORTING USERS' MENTAL HEALTH, ENSURING THAT IT MEETS THE NEEDS AND EXPECTATIONS OF ITS USERS.

CONCLUSION AND RECOMMENDATIONS

SUMMARIZE THE FINDINGS FROM THE RESEARCH AND EVALUATION PROCESS, HIGHLIGHTING THE KEY INSIGHTS AND CONTRIBUTIONS OF THE STUDY. PROVIDE RECOMMENDATIONS FOR FUTURE IMPROVEMENTS AND RESEARCH DIRECTIONS IN THE FIELD OF CHATBOT APPLICATIONS FOR MENTAL HEALTH SUPPORT, AIMING TO FURTHER ENHANCE THE EFFECTIVENESS AND USABILITY OF SUCH APPLICATIONS IN THE FUTURE.

OBJECTIVES

DESIGN A USER-FRIENDLY CHATBOT INTERFACE THAT ENCOURAGES USERS TO ENGAGE WITH THE APPLICATION.

PROVIDE PERSONALIZED SELF-CARE TIPS AND ACTIVITIES BASED ON USERS' MOOD AND PREFERENCES.

DEVELOP A CHATBOT SYSTEM THAT CAN UNDERSTAND AND RESPOND TO USERS' MENTAL HEALTH QUERIES AND CONCERNS.

EVALUATE THE EFFECTIVENESS OF THE CHATBOT APPLICATION IN SUPPORTING USERS' MENTAL HEALTH THROUGH USER FEEDBACK AND SURVEYS.
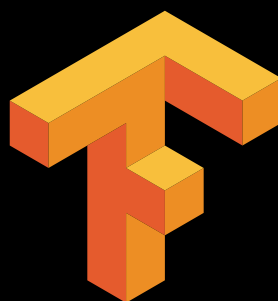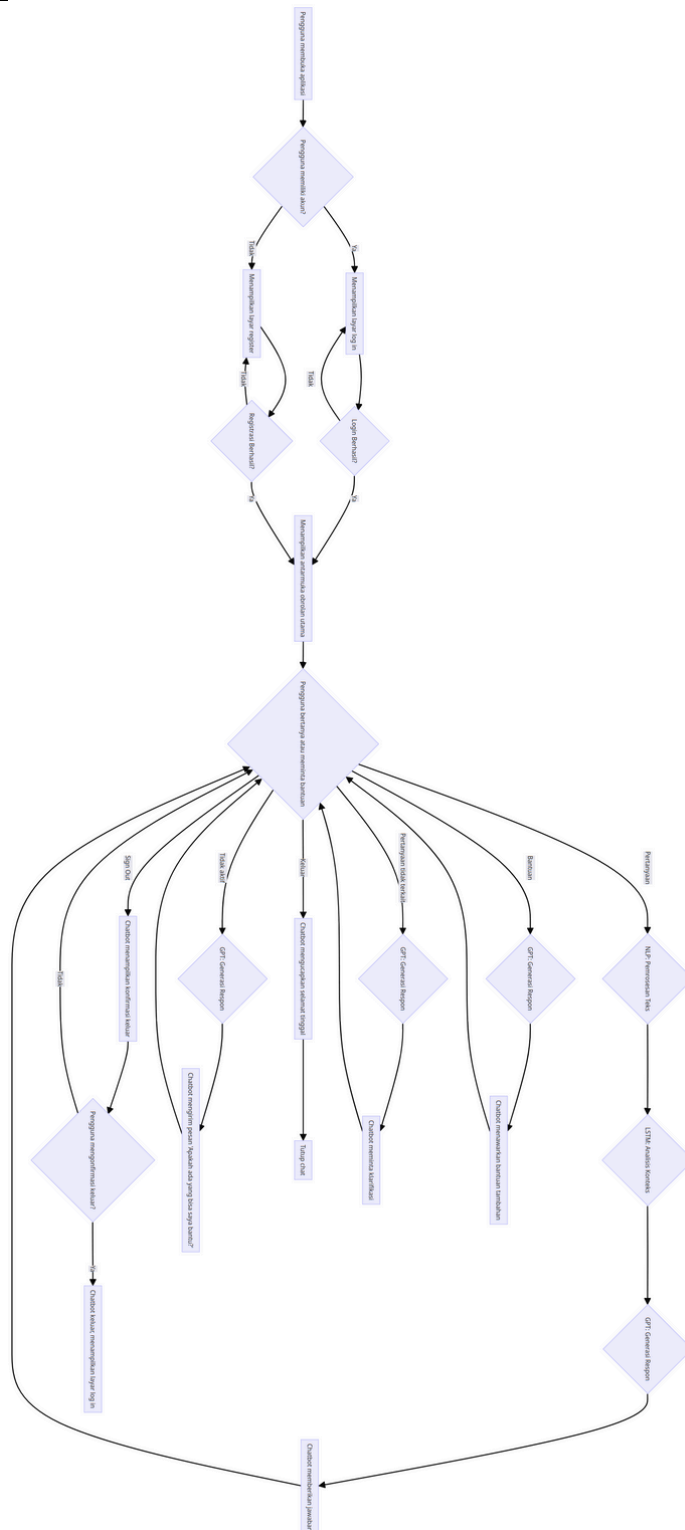
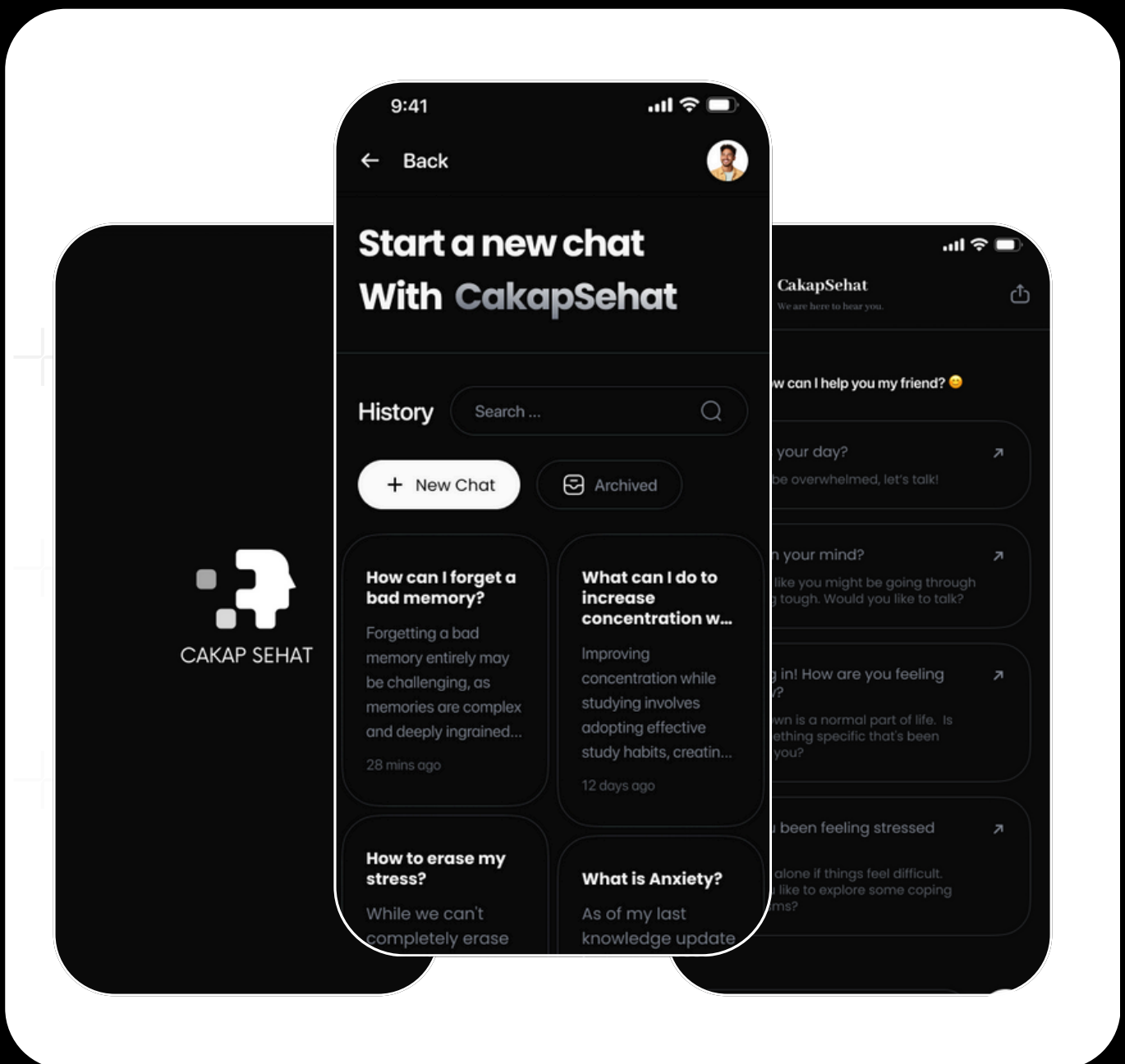# TECH STACKS

TIME TABLE

PROJECT SCHEDULE

CAKAP SEHAT

TIME LINE	WEEK 2 - 3	WEEK 4 - 5	WEEK 6 - 7	WEEK 8 - 9	WEEK 10 - 11	WEEK 12
Make Plans	██					
Research Methodology		██				
Research Dataset			██			
Search Dataset And Model				██		
Training Model					██	
Implement On Web					██	
Take Video Capstone						██

FLOWCHART

DESIGN

The following is a mock-up view of the CakapSehat UI that we designed.

REFERENCES

- Brantner, Benedikt, 'Generalizing Adam To Manifolds For Efficiently Training Transformers', 2023, 1–19 <http://arxiv.org/abs/2305.16901>

- Das, Avisha, Salih Selek, Alia R. Warner, Xu Zuo, Yan Hu, Vipina Kuttichi Keloth, and others, 'Conversational Bots for Psychotherapy: A Study of Generative Transformer Models Using Domain-Specific Dialogues', Proceedings of the Annual Meeting of the Association for Computational Linguistics, 2022, 285–97 <https://doi.org/10.18653/v1/2022.bionlp-1.27>

- Gupta, Vanshika, Varun Joshi, Akshat Jain, and Inakshi Garg, 'Chatbot for Mental Health Support Using NLP', in 2023 4th International Conference for Emerging Technology, INCET 2023, 2023 <https://doi.org/10.1109/INCET57972.2023.10170573>

- Ilias, Loukas, Spiros Mouzakitis, and Dimitris Askounis, 'Calibration of Transformer-Based Models for Identifying Stress and Depression in Social Media', IEEE Transactions on Computational Social Systems, 11.2 (2024) <https://doi.org/10.1109/TCSS.2023.3283009>

- Kaushik, Baijnath, Akshita Sharma, Akshma Chadha, and Reya Sharma, 'Machine Learning Model for Sentiment Analysis on Mental Health Issues', in 2023 15th International Conference on Computer and Automation Engineering, ICCAE 2023, 2023 <https://doi.org/10.1109/ICCAE56788.2023.10111148>

- Omarov B., Narynov S., and Zhumanov Zh., 'Developing A Psychologist Chat-Bot: Data Set, Architecture, Design And The Chat-Bot Used', 4 (2022), 463–71 <https://doi.org/10.52167/1609-1817>

- Omarov, Batyrkhan, Zhandos Zhumanov, Aidana Gumar, and Leilya Kuntunova, 'Artificial Intelligence Enabled Mobile Chatbot Psychologist Using AIML and Cognitive Behavioral Therapy', International Journal of Advanced Computer Science and Applications, 14.6 (2023), 137–46 <https://doi.org/10.14569/IJACSA.2023.0140616>

REFERENCES

- Pandey, Sumit, and Srishti Sharma, 'A Comparative Study of Retrieval-Based and Generative-Based Chatbots Using Deep Learning and Machine Learning', Healthcare Analytics, 3.May (2023), 100198 <https://doi.org/10.1016/j.health.2023.100198>

- Panigrahi, Abhishek, Sadhika Malladi, Mengzhou Xia, and Sanjeev Arora, 'Trainable Transformer in Transformer', 2023 <http://arxiv.org/abs/2307.01189>

- Rani, Komal, Harshit Vishnoi, and Manas Mishra, 'A Mental Health Chatbot Delivering Cognitive Behavior Therapy and Remote Health Monitoring Using NLP And AI', in 2023 International Conference on Disruptive Technologies, ICDT 2023, 2023 <https://doi.org/10.1109/ICDT57929.2023.10150665>

- Resti Tito H, Villarino, and Villarino Maureen Lorence F, 'ChatGPT (Generated Pre-Trained Transformer) As an Adjunct to Mental Health Interventions: A Commentary', International Journal of Psychology and Psychoanalysis, 9.1 (2023) <https://doi.org/10.23937/2572-4037.1510062>

- Vaswani, Ashish, Noam Shazeer, Niki Parmar, Jakob Uszkoreit, Llion Jones, Aidan N. Gomez, and others, 'Attention Is All You Need', in Advances in Neural Information Processing Systems (Neural information processing systems foundation, 2017), MMXVII-DECEMBER, 5999–6009