BeLeaf

Learn. Educate. Achieve. Focus.

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Advisor: **Dr. Wenjia Li** , CSCI 457: Senior Project II Spring 2025

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Introduction



Be-Leaf: An app empowering children with learning disabilities.

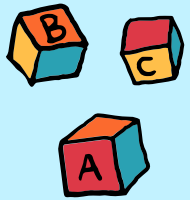
Provides a supportive, engaging, and accessible learning environment.

Mission: Transform challenges into growth opportunities, helping children thrive at their own pace.

Supports educators and parents in fostering every child's potential

Motivation

- Each of our members knew at least one kid with autism
- Teachers should teach their students and create a strong connection between them and their parents.
- Every child deserves access to effective learning tools.



Research & Design Pivots

Research

- Learning disabilities are caused by differences in brain development
- Children process information differently, affecting reading, writing, and math
- Lead to frustration, low confidence, and anxiety, especially in math.



Research & Design Pivots

Pivot Points

- **Text-to-Speech & Visual Aids**
  "Some students read well, but many understand better when they hear."

- **Customizable Pomodoro Timer**
  "Transitions are tough — structure makes it easier."

- **Emotion Detector for Awareness**
  "Sometimes they don't recognize or express what they feel."



Similar Apps

ABC app

- Supports children with **autism** and **dyslexia** .
- Designed with **colorful visuals** and a **kid-friendly interface** .
- Includes **minimal buttons** for easy navigation and accessibility.





Similar Apps

ClassDojo (An Education app)

- Online app and classroom management platform
- Provides separate interfaces for teachers, parents, students, and school leaders.
- Enables easy parent-teacher communication.





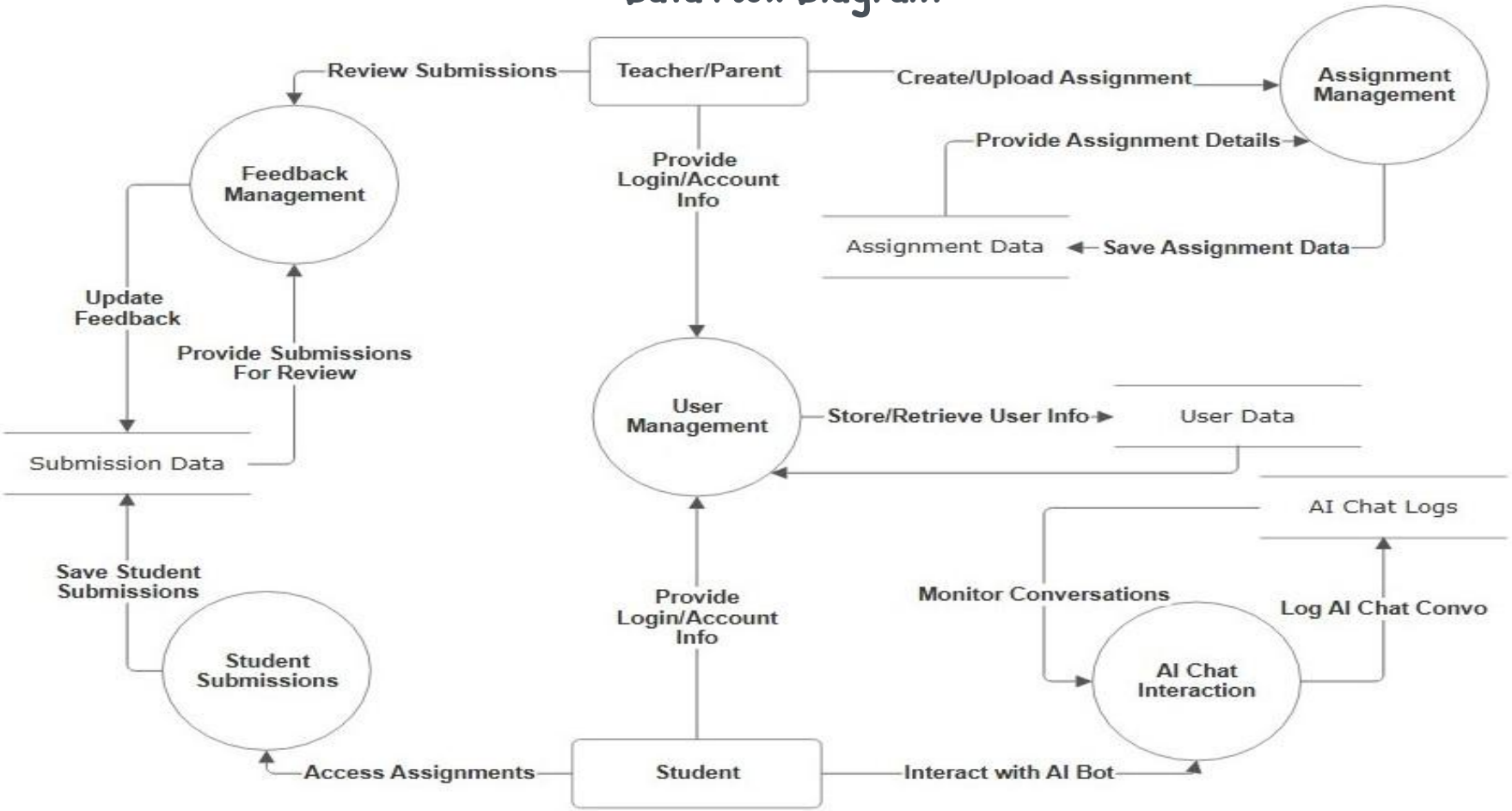
Similar Apps

AutiSpark

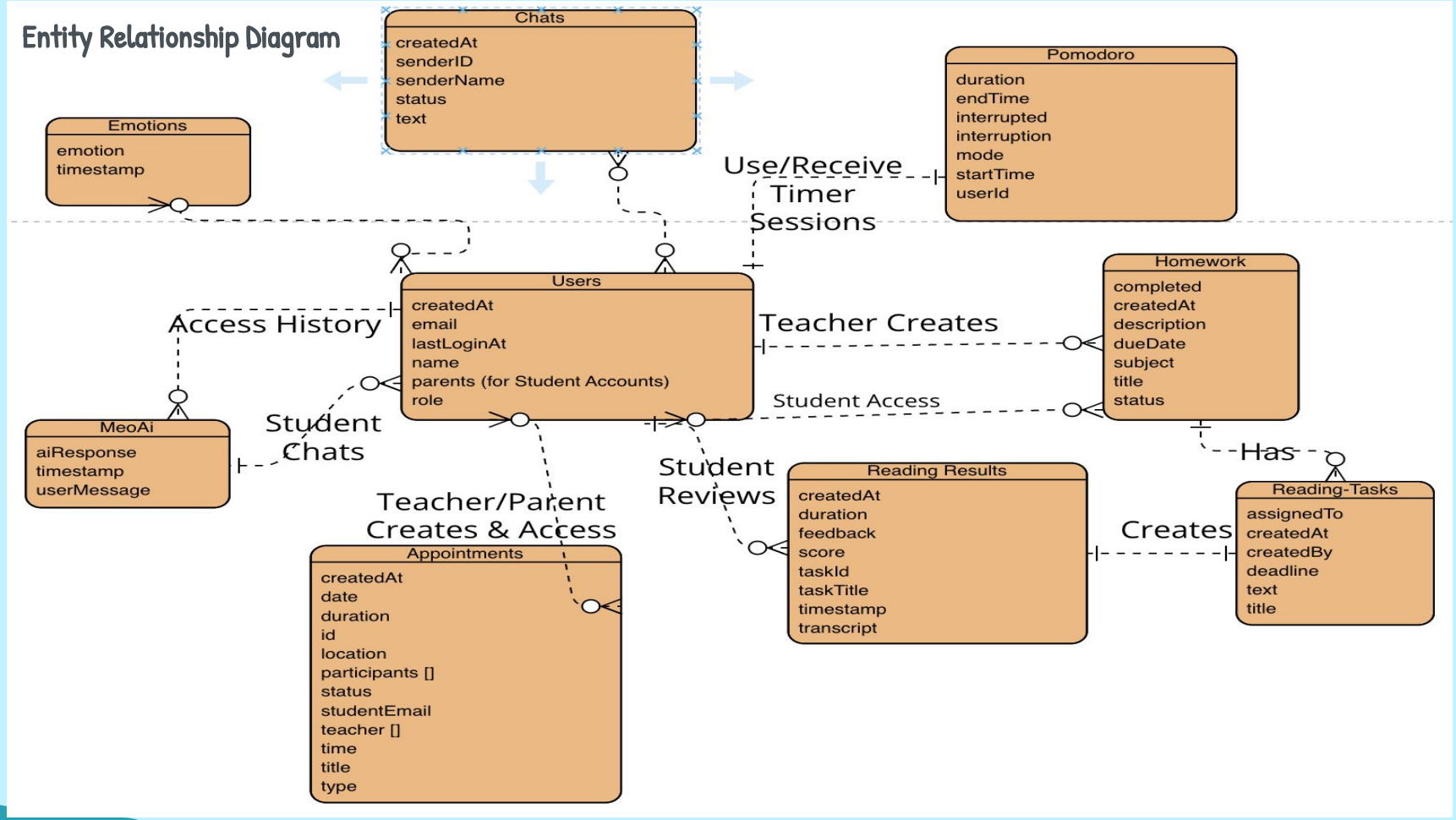
- App designed specifically for **kids with autism** .
- Includes sections for **alphabets, math** , and other learning areas.
- Teaches **daily life skills** like washing hands, wearing shoes, and eating with a spoon.



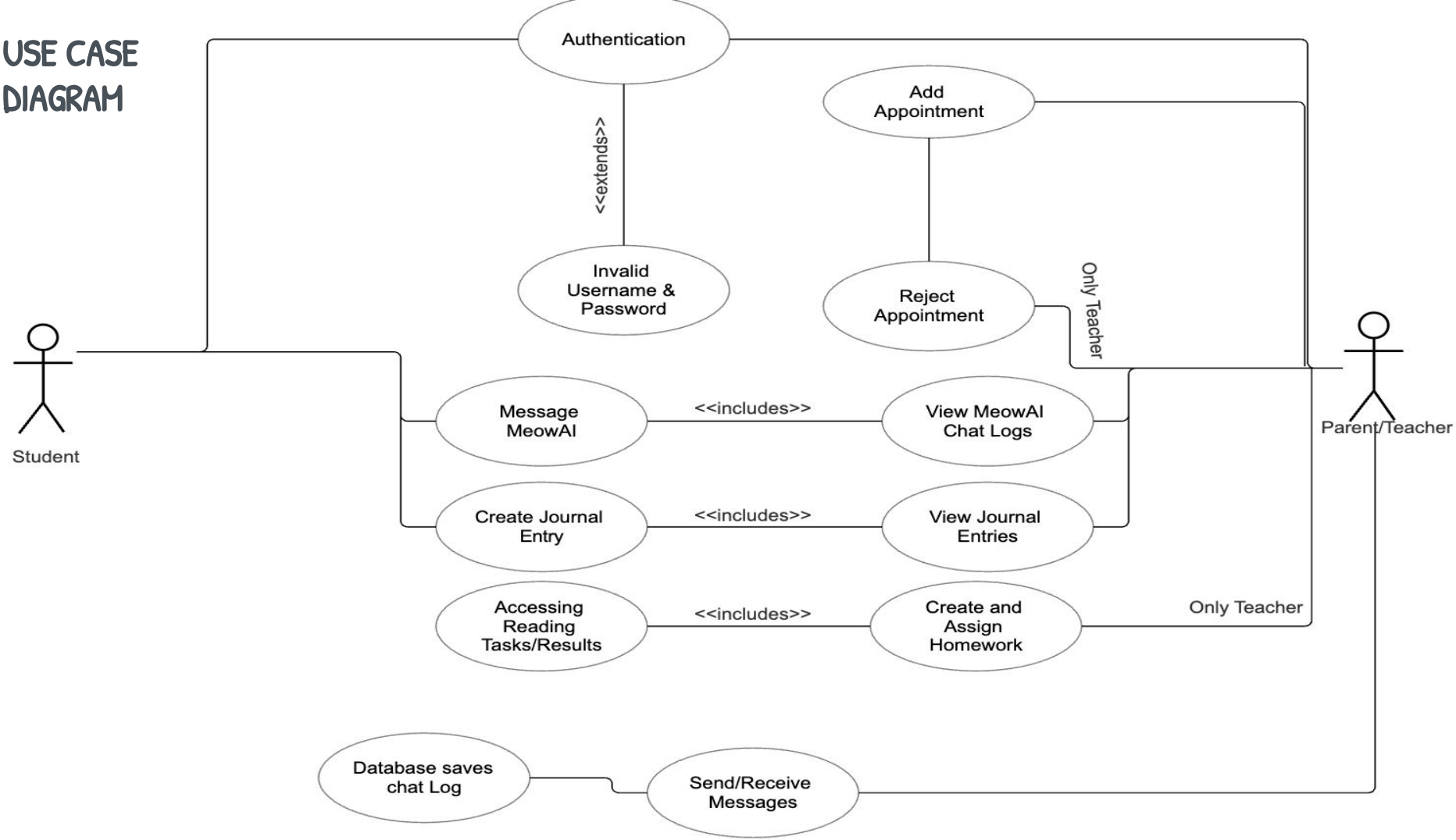
Data Flow Diagram



Entity Relationship Diagram



USE CASE DIAGRAM



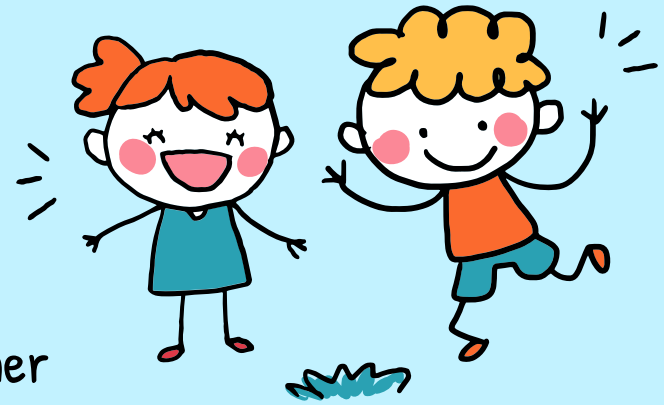
Key Features

#1. Assignment manager

Ensures student remains on track

#2. MeoAI

Kid-friendly voice bot



#3. Chat function

Increases parent and teacher communication

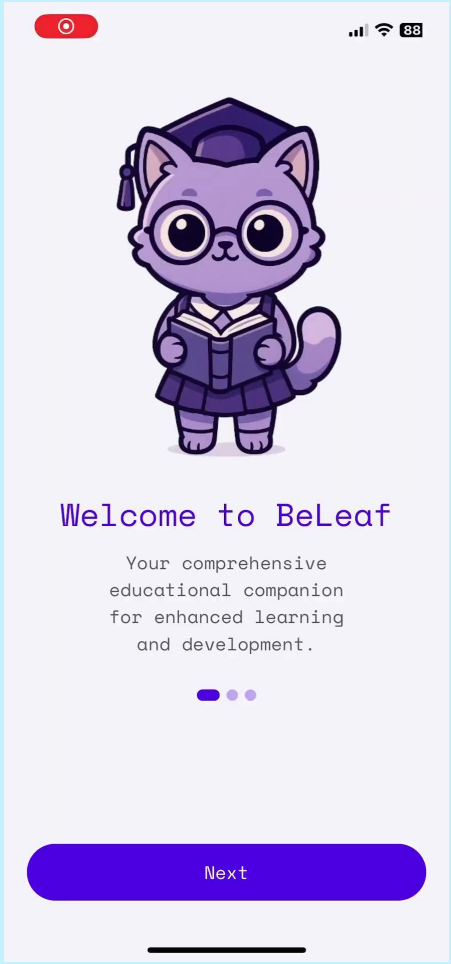
#4. Emotional Recogniton

Supports emotional awareness and self regulation

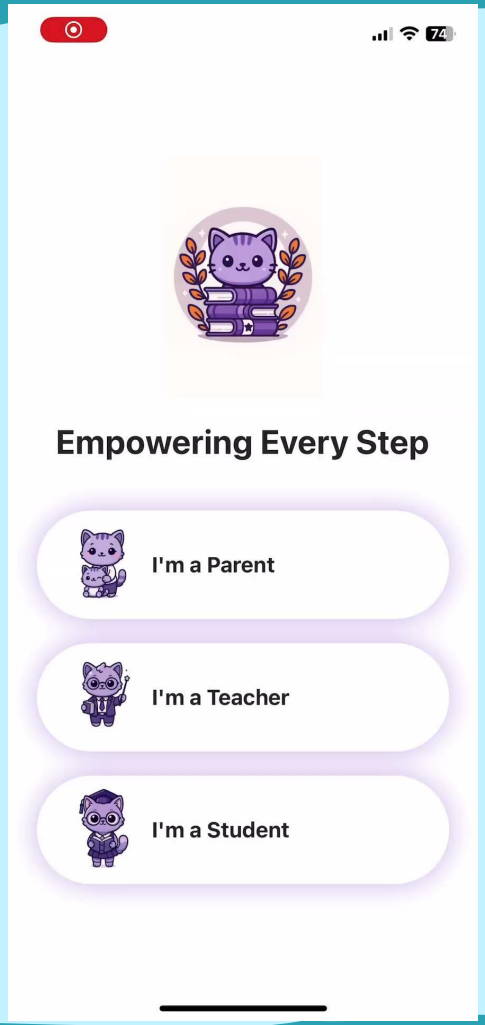
Demo



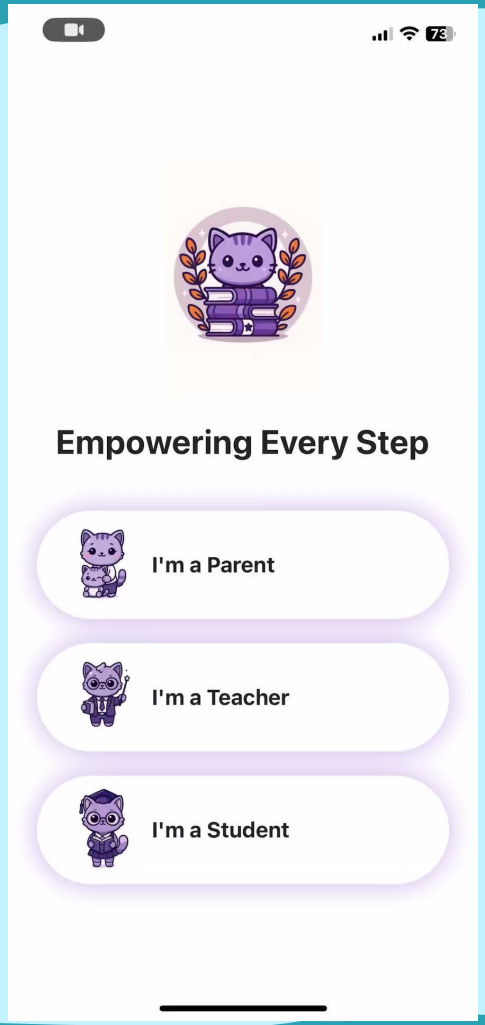
Student view:



Parent view:



Teacher view:



Previous Course at NYIT

#1. CSCI 380

Introduction to Software Engineering

#2. CSCI 318

Programming Language Concepts

#3. CSCI 300

Database management

#4. CSCI 185

Computer Programming II

#5. CSCI 260

Data Structures

#6. CSCI 335

Design and Analysis of Algorithms

Agile



Sprints

Followed a weekly sprint schedule, meeting every Wednesday and Thursday

Iterative Development

Every sprint resulted in a working part of the app, ready for review or testing

Regular Feedback

We met with a professional who works with children with learning disabilities every two weeks

Continuous Improvement

After each sprint, we reviewed our progress and challenges.

Agile Phases

Design

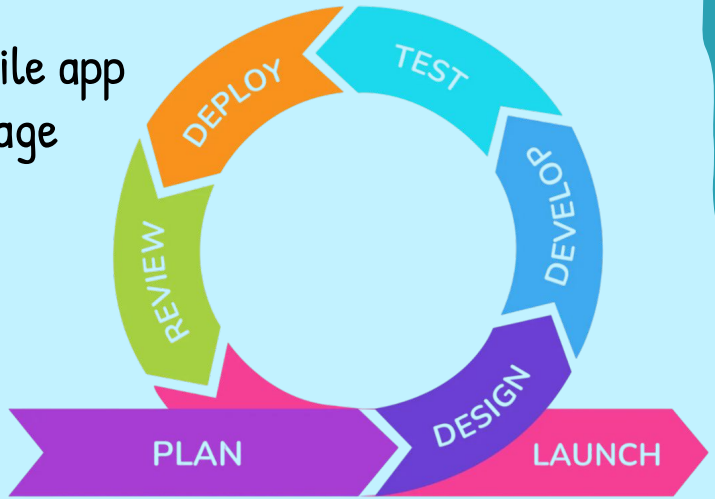
- Defined clear user needs before starting
- Prioritized accessibility: soft colors, large buttons, simple icons
- Figma

Develop

- Used React Native with Expo for cross-platform mobile app
- Implemented Firebase for authentication & data storage
- **Pair programming** to improve collaboration

Test

- Couldn't test directly with children
- Simplified key features based on feedback



Agile Phases

Deploy

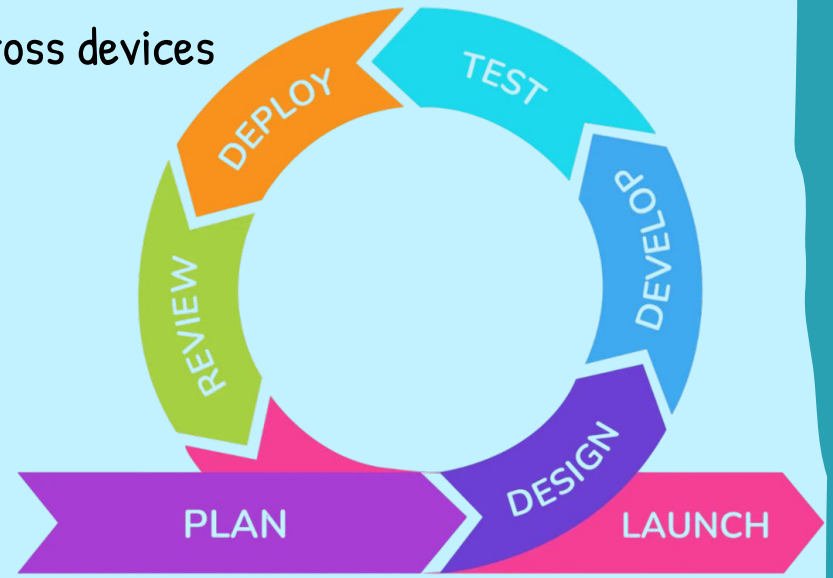
- Ran the app locally via **Expo**
- Integrated with **Firebase**
- Verified that appointments and data updated across devices

Review

- Evaluated based on teacher and parent feedback

Launch

- Delivered a fully functional prototype
- Not publicly released yet, but fully documented



Technologies



React Native with Expo

- Built the app for iOS and Android. Expo made testing fast and easy

TypeScript

- Proficient in Typescript

Firebase

- Login system (Authentication)
- Saved data like appointments (Firestore)



Technologies

Text-to-Speech



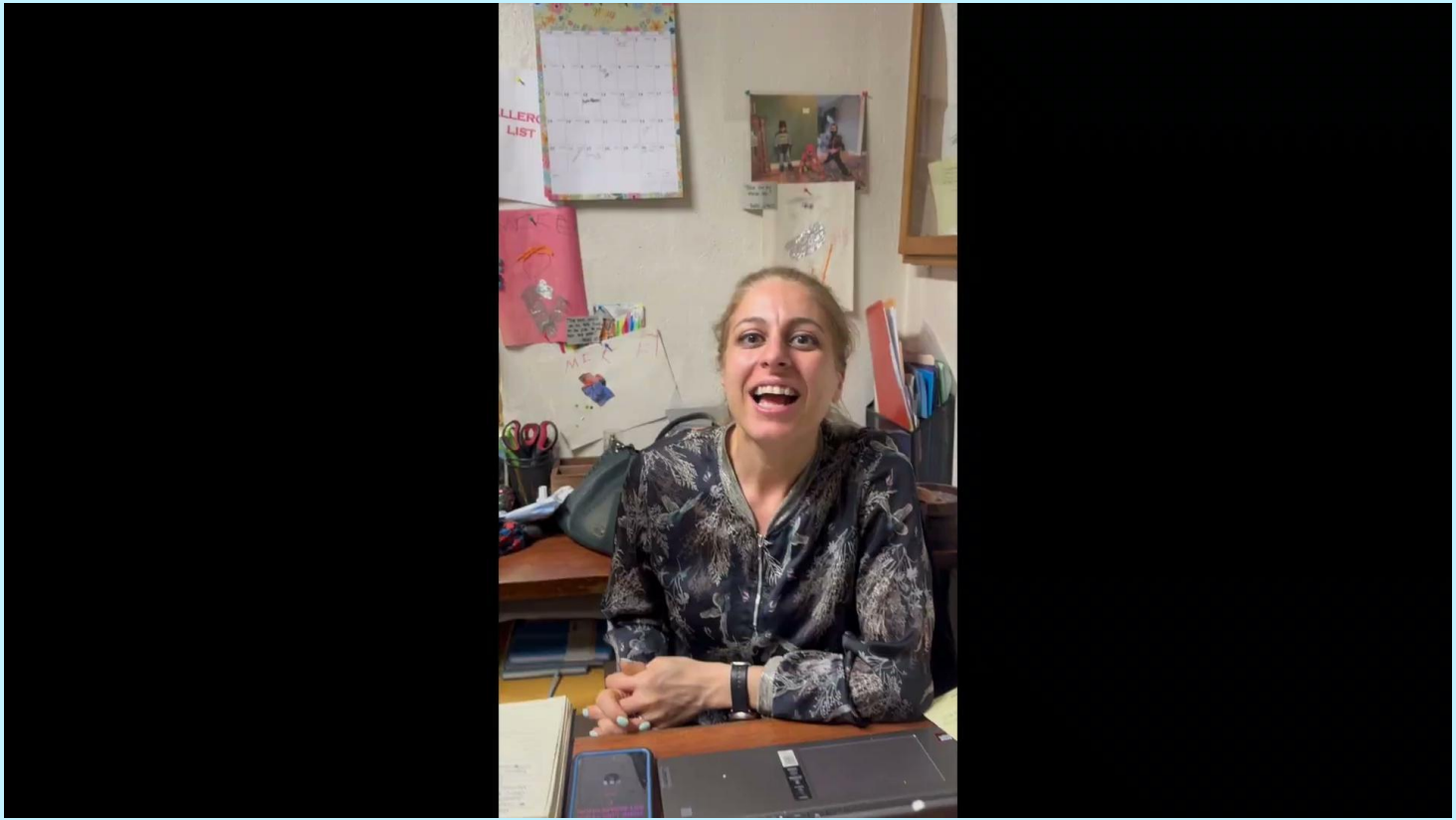
- App can read text out loud. Helps kids who struggle with reading. It's one of the best because it offers high accuracy

Speech Recognition

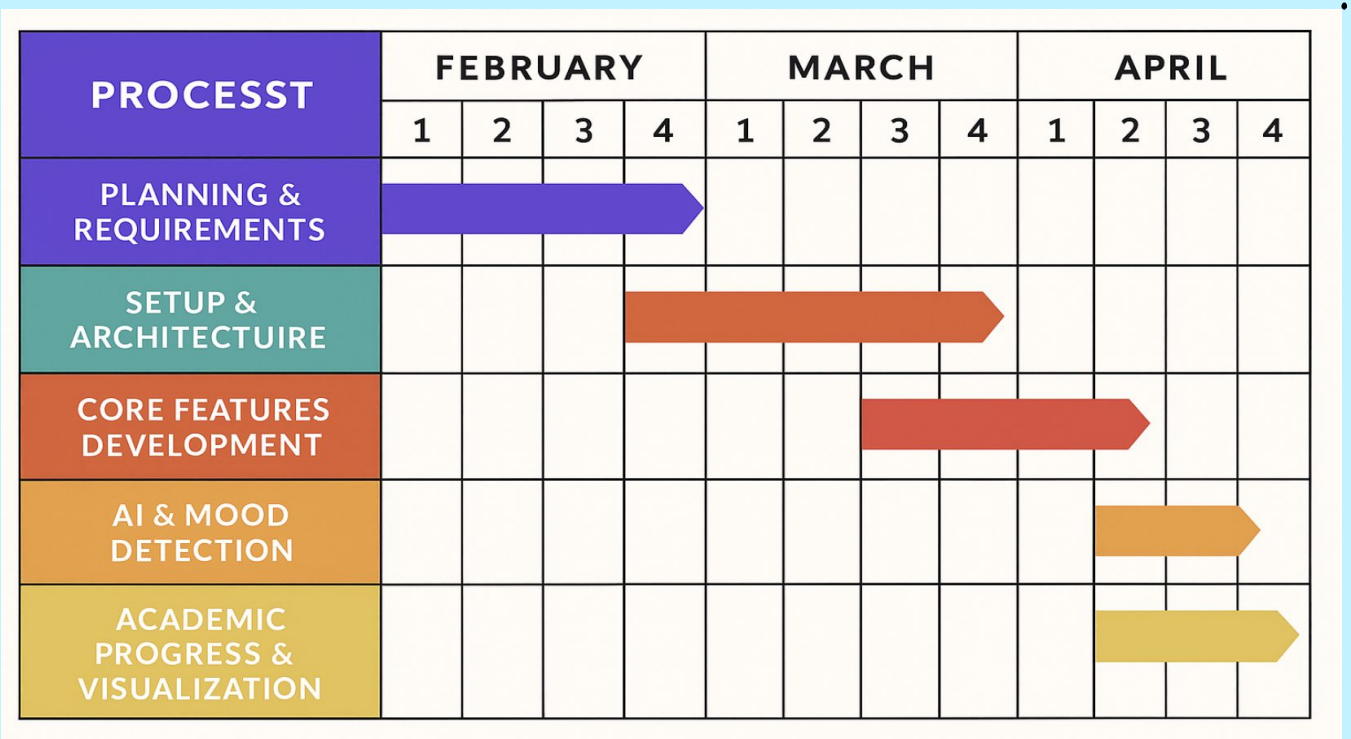


- Voice gets turned into text using Google Speech API. noise cancellation, and advanced features like word-level timestamps and speaker recognition

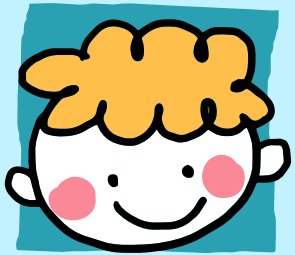
Professional Feedback



Gantt chart

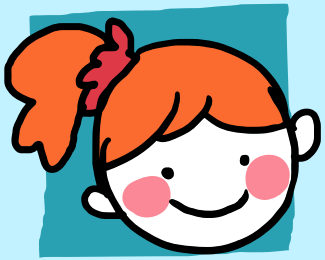

PROCESST
FEBRUARY
MARCH
APRIL
1
2
3
4
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3
4
PLANNING & REQUIREMENTS
SETUP & ARCHITECTUIRE
CORE FEATURES DEVELOPMENT
AI & MOOD DETECTION
ACADEMIC PROGRESS & VISUALIZATION

Our team contributions



Justin A.

Developed speech recognition, managed firebase integration, debugging



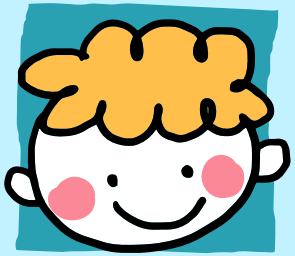
Simrose K.

Conducted research, developed Pomodoro, Emotional recognition and dashboard feature



Dayana H.

Helped with professional outreach, developed MeowAI, technical writer



Vighanesh G.

Developed and Integrated core app features like journaling, chat, assignments and appointments



Wedad M.

Project manager, conducted professional research and feedback, developed login authentication and appointment scheduler

Limitations

Couldn't test directly with children

Lack of special education background in our team



How did we worked around it?

- Got feedback from parents and teachers First
- Solved this by researching and getting input from professionals

Future Directions

IRB Approval & User Testing

Partnering with Specialized Centers

Continue improvements from professional feedback



THANKS!

Do you have any questions?

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