ADAPTIVE LEARNING PATH

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APPLICATION:

- Personalizes learning for children with learning difficulties
- Analyzes emotions and behavior in real-time
- Adapts content dynamically to keep learners engaged
- Follows therapist-recommended guidelines for safe learning.

BUSINESS PROBLEM:

- Traditional methods don’t engage children with learning difficulties
- This leads to slow learning and poor outcomes
- The ALP app solves this by personalizing learning paths based on real-time emotional and behavioral feedback, improving engagement and outcomes.

USERS:

- Children with learning difficulties
- Therapists and educators
- Parents & caregivers (for tracking progress and support)

USER BENEFITS:

- Personalized content and real-time feedback
- Progress tracking for students
- Tools for educators to monitor performance and offer support

ROLES INVOLVED IN THE SYSTEM:

- **Children:** Main users interacting with content
- **Parents:** Track progress and support learning
- **Admins/Developers:** Maintain and update the system

USER INTERACTION:

- **Students:** Provide quiz responses, preferences, and feedback
- **Instructors:** Input course materials and monitor performance
- **Outputs:** Personalized learning paths, recommended resources, progress dashboards, and performance analytics

DATASET AND SOURCE INFORMATION :

- The dataset used is FER2013 from Kaggle
- Contains labeled facial images of various emotions
- Used for training emotion recognition models

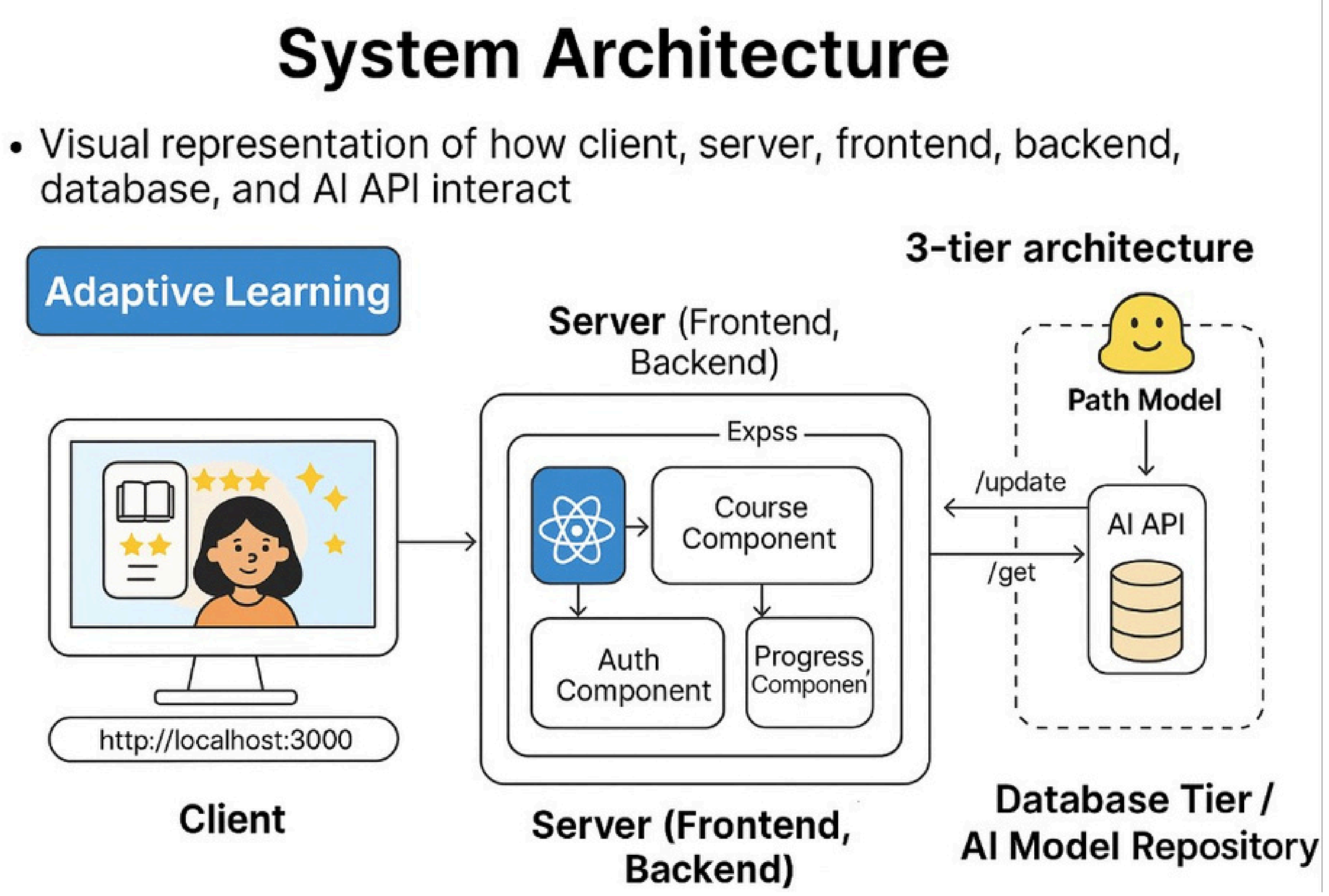
DATA PREPROCESSING STEPS:

We preprocess the FER2013 dataset by performing several key steps:

- **Data cleaning:** Remove incomplete or corrupted entries
- **Normalization:** Scale pixel values (e.g., 0 to 1)
- **Resizing:** Ensure consistent image dimensions
- **Label encoding:** Convert emotion categories to numerical labels
- **Data augmentation:** Apply techniques like flipping and rotation

TECH STACK OVERVIEW:

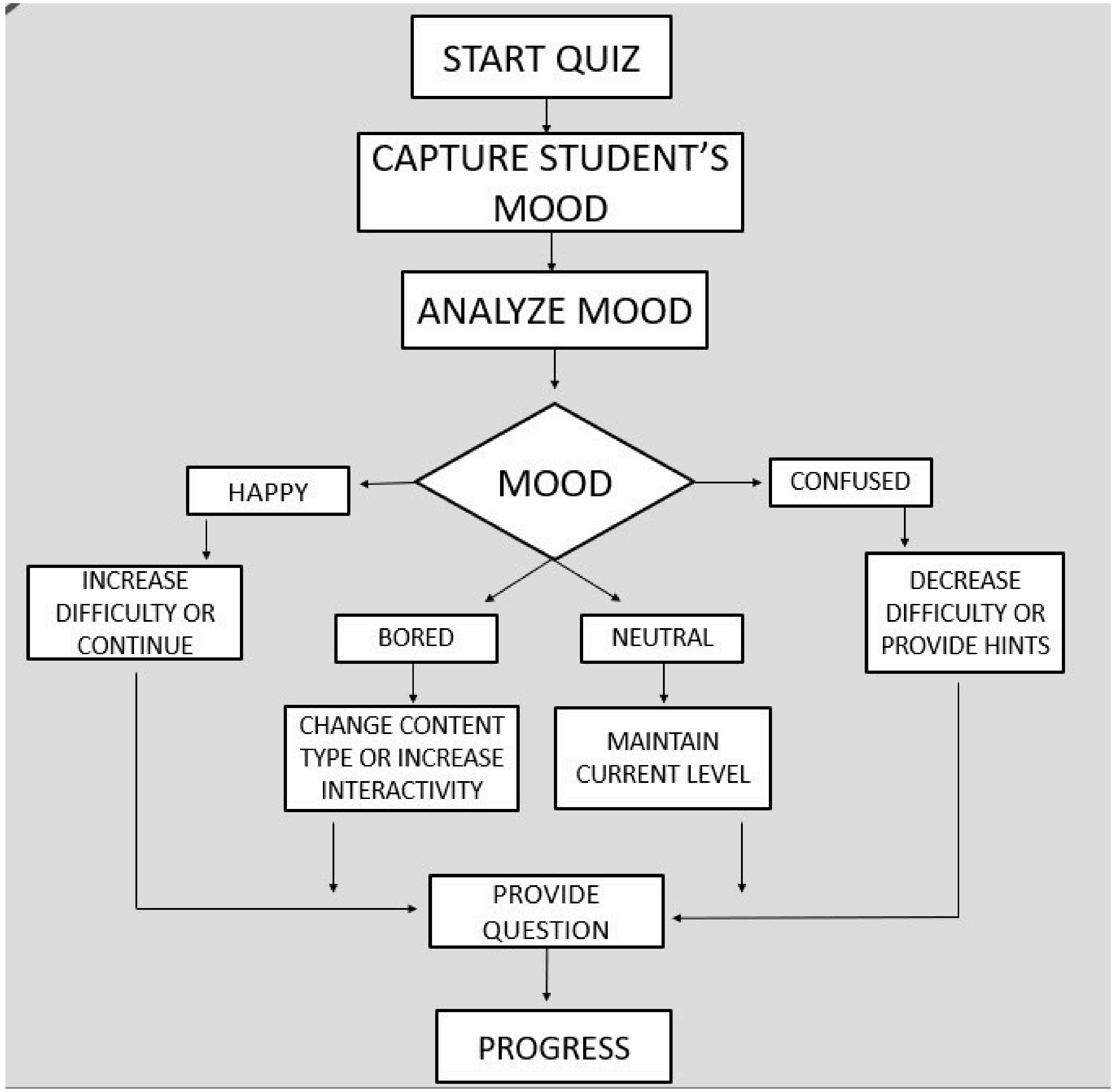
- **Frontend:** HTML ,CSS ,JS and React for a responsive UI and Face Mesh for real-time facial feature tracking and emotion detection
- **Backend:** Node.js and Express for server-side logic and APIs
- **Database:** MongoDB for storing user data and learning progress
- **Machine Learning:** Python, TensorFlow, and Hugging Face Transformers for emotion recognition
- **Deployment:** Cloud platform (e.g., AWS) for scalability and accessibility



System Architecture

- Visual representation of how client, server, frontend, backend, database, and AI API interact

WORK FLOW :



START QUIZ

CAPTURE STUDENT’S MOOD

ANALYZE MOOD

MOOD

HAPPY

CONFUSED

INCREASE DIFFICULTY OR CONTINUE

BORED

NEUTRAL

DECREASE DIFFICULTY OR PROVIDE HINTS

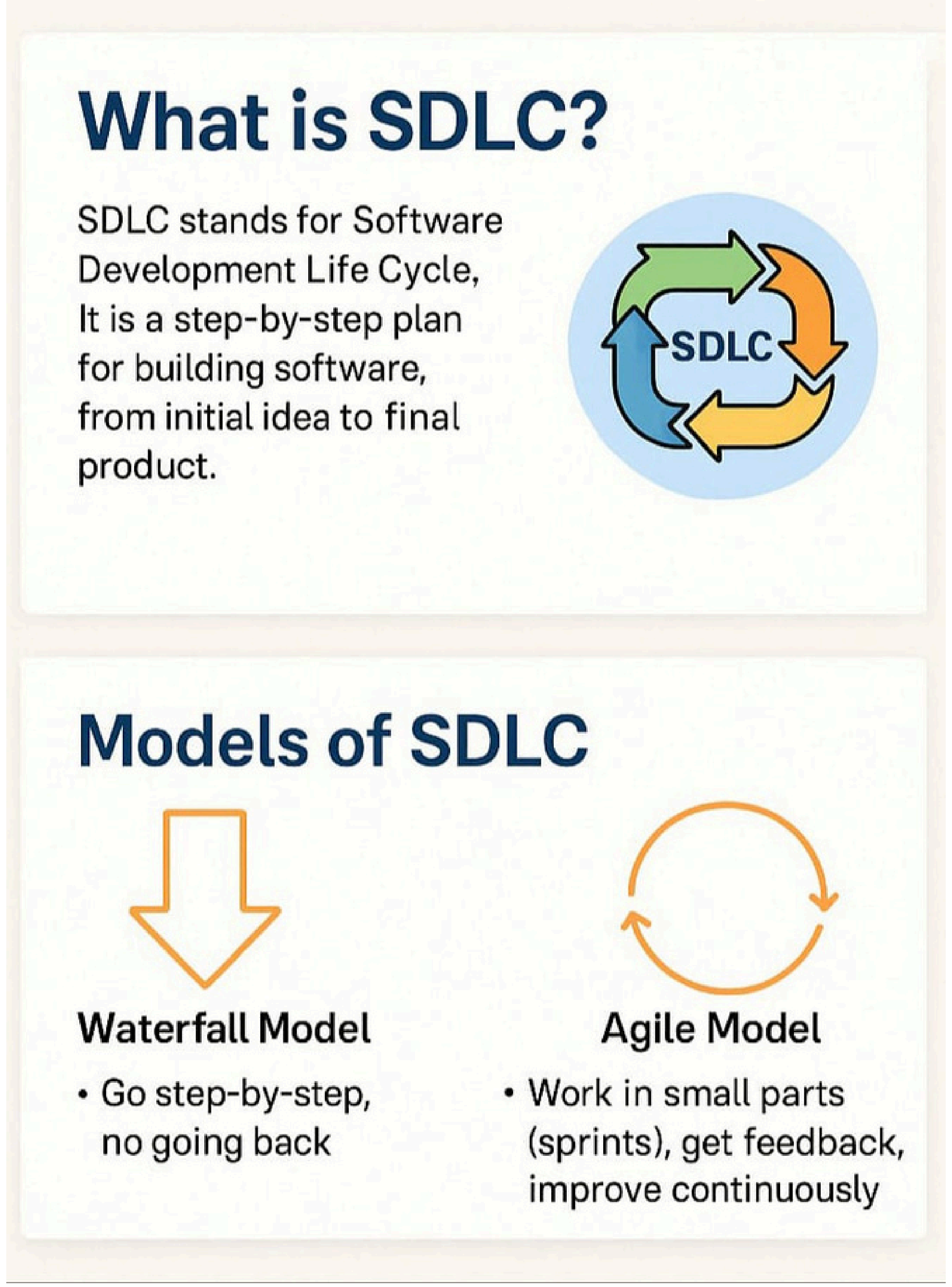
CHANGE CONTENT TYPE OR INCREASE INTERACTIVITY

MAINTAIN CURRENT LEVEL

PROVIDE QUESTION

PROGRESS

SDLC:



What is SDLC?

SDLC stands for Software Development Life Cycle, It is a step-by-step plan for building software, from initial idea to final product.

Models of SDLC

Waterfall Model

- Go step-by-step, no going back

Agile Model

- Work in small parts (sprints), get feedback, improve continuously

CLOUD DEPLOYEMENT:

- **Cloud-Based Hosting:** The app will be hosted on the cloud for better performance and accessibility.
- **Services Used**: Platforms like AWS or Firebase will handle data storage, app hosting, and traffic management.
- **Scalability:** Cloud deployment allows the app to scale easily based on user demand.
- **Availability & Security:** Ensures the app is always available and secure for users.

THANK YOU