

Project Requirements: AI Animated Video Generator for Kids Education

1 Project Overview

AI-powered platform that automatically creates animated educational videos for kids using text prompts. User enters a topic or educational content → System generates animated characters, narration, background music, and scenes.

2 Objectives

- Make learning fun & interactive for children
- Provide teachers/parents an easy video creation tool
- Automatically generate animations without manual editing

3 Key Features

◆ User Input Features

- Text prompt input (topic, story, lesson)
- **Voice input for prompt using speech-to-text**
- Option to choose video style (cartoon, 2D animation)
- Character selection (boy, girl, animals, etc.)
- Background/theme library (school, forest, space, etc.)

◆ AI Generation Features

- Script generation from prompt
- Text-to-Speech voice-over (kid-friendly voices)
- **Support for multiple languages for narration (e.g., English, Hindi, etc.)**
- Auto animation scene generation
- Background music & sound effects
- Subtitle generation
- **Auto generation of underlying video code/scene structure (JSON or script) for developers**

◆ Output Features

- Downloadable MP4 video format
- Resolution Options (720p / 1080p)
- Option to share or embed

4 System Architecture

- Frontend: React.js / Next.js
- Backend: Node.js / Python
- AI Models: Text generation, TTS, Animation rendering
- Cloud: AWS / Firebase for media processing
- Database: MongoDB / Firebase

5 Modules

1. **User Module** – login, role access
2. **Prompt Module** – topic input, voice input & customization
3. **AI Script Module** – educational voice script creation
4. **Animation Module** – scene + character generation
5. **Audio Module** – narration + music (multi-language)
6. **Video Export Module** – rendering & downloading
7. **Code Export Module** – exports structured code/JSON of video scenes & animations

6 Functional Requirements

- FR1: User can enter educational topic as text
- FR2: System must generate script using AI
- FR3: System must animate characters automatically
- FR4: Video should include audio narration
- FR5: Users can preview and download videos

7 Non-Functional Requirements

- NFR1: User-friendly interface for kids & teachers
- NFR2: Rendering should be optimized below 5 mins
- NFR3: Secure user data (encryption, authentication)
- NFR4: Cross-platform support (Mobile + Desktop)

8 Target Users

- School teachers, Parents, Kids (age 4–12)
- Educational content creators & online tutors

9 Technology Stack

Layer	Technology
Frontend	React.js / Next.js
Backend	Node.js / Python
AI Services	GPT, TTS, Animation Models
Database	MongoDB / Firebase
Deployment	AWS / Render / Vercel

10 Future Enhancements

- Voice cloning for teachers
- Multiple language support
- Interactive quizzes inside videos
- Character lip-sync improvements

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