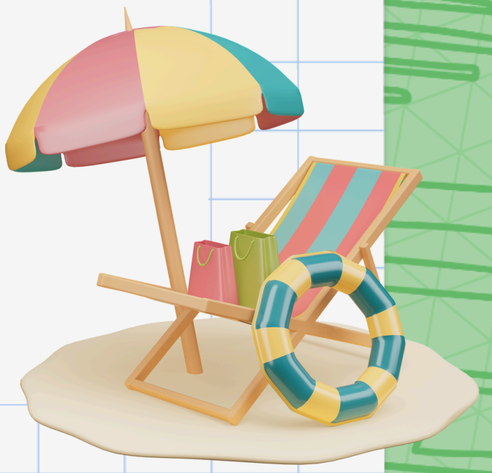
BEACHHACK

Project Title:

Prakashika: AI-Powered Inclusive Learning for AI



Team Name: Akatsuki

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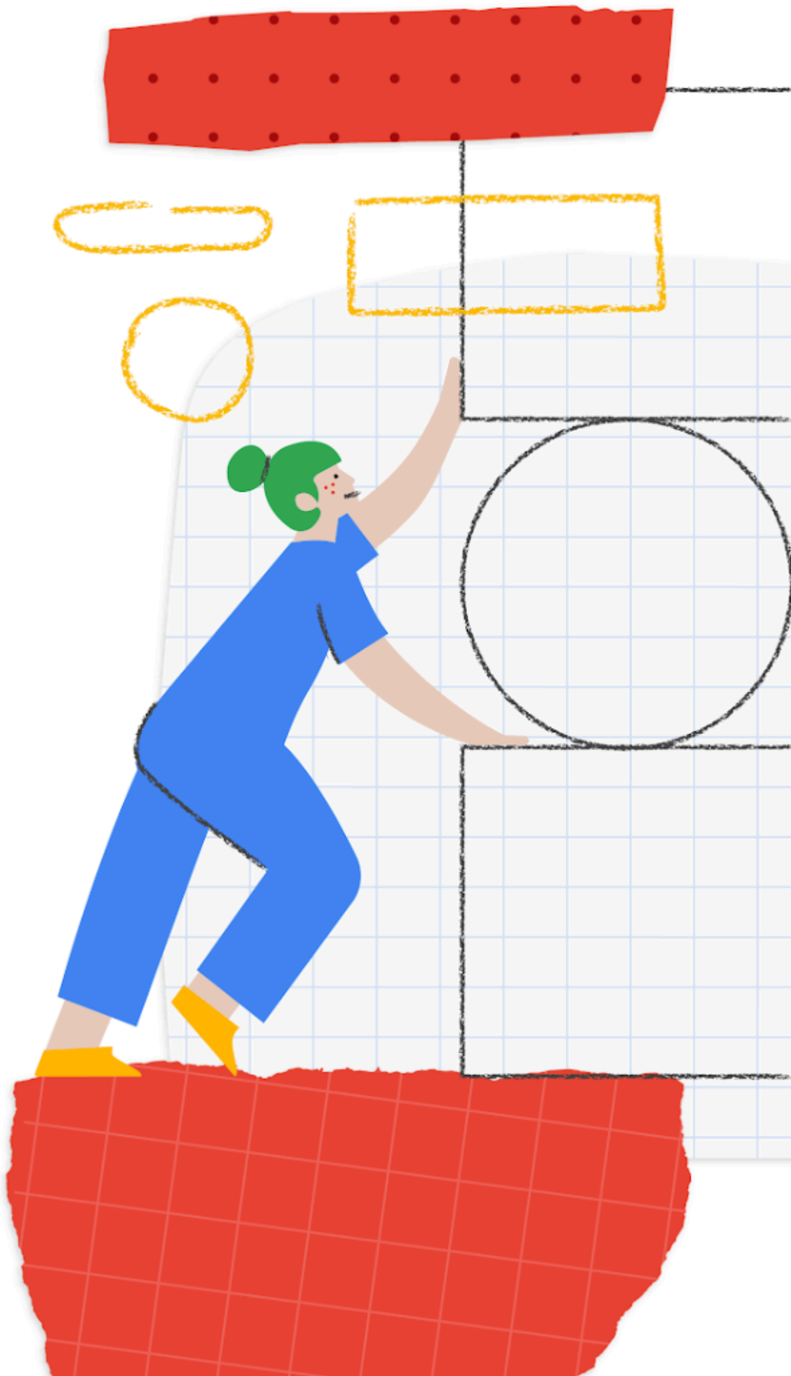
Problem Statement

A Universal AI Tutor for Personalized Learning

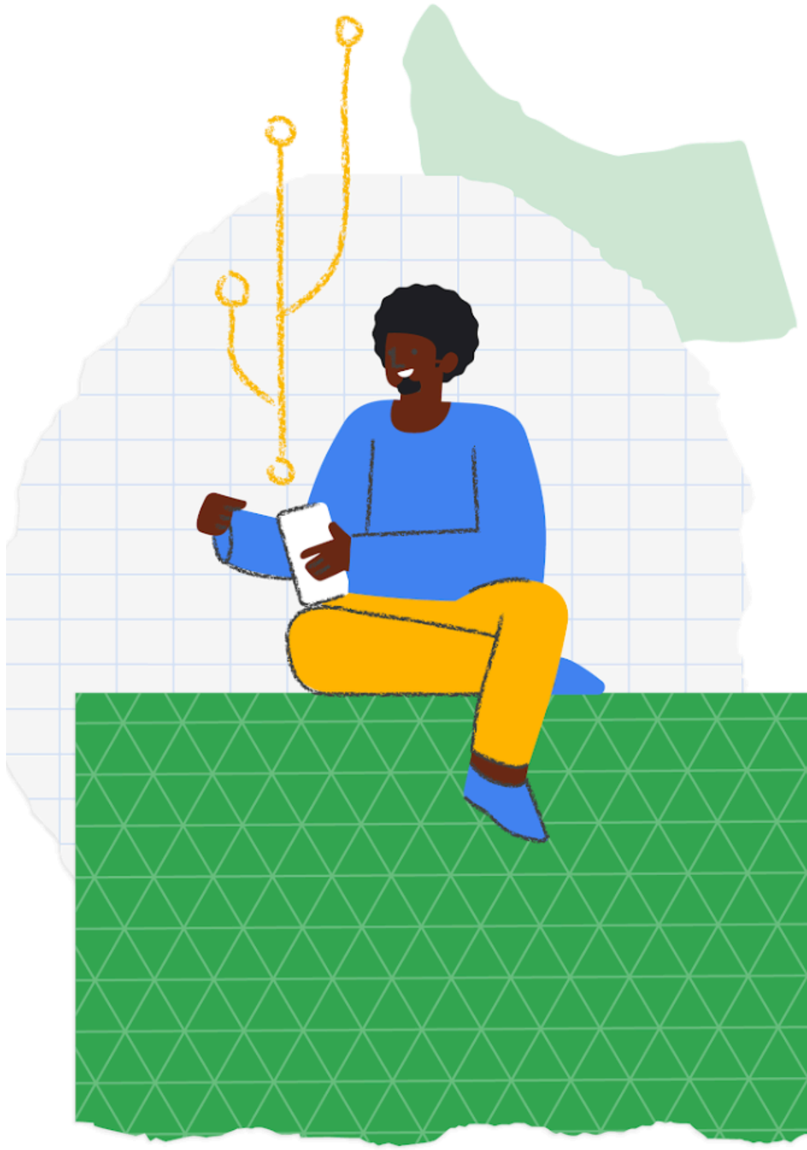
- Traditional platforms often fail to provide engaging and adaptive tools for varied learning styles.
- Students with ADHD, dyslexia, or autism face significant barriers due to limited accessibility and inclusivity features.
- The lack of personalized and interactive resources reduces motivation and interest in learning.
- The inability to meet diverse needs leads to suboptimal academic performance and understanding.
- Many students cannot realize their full potential due to traditional educational platforms' rigid and one-size-fits-all approach.



Proposed Solution

- **Prakashika** is an AI-powered tutor that revolutionizes personalized education by leveraging advanced technologies to cater to diverse learning needs. It ensures an inclusive, engaging, and adaptive learning experience through the following key solutions:

- AI-Driven Personalization – Uses adaptive learning algorithms to customize content, pacing, and difficulty based on individual student needs and learning preferences.
- Gamified Learning Experience – Incorporates interactive challenges, rewards, and progress tracking to enhance student engagement and motivation.
- Accessibility & Inclusivity – Provides assistive tools such as text-to-speech, focus mode, dyslexia-friendly fonts, and multi-sensory learning options, making education accessible for neurodiverse learners.
- Real-Time Feedback & Analytics – Delivers instant performance insights, enabling students to track their progress while allowing educators and parents to provide timely support.



Tech Stack

- Next Js, React-Native
- MongoDb
- Amazon Polly,Open APIs
- TensorFlow.js, Pytorch,NLP tools
- Phaser.js,Socket.IO

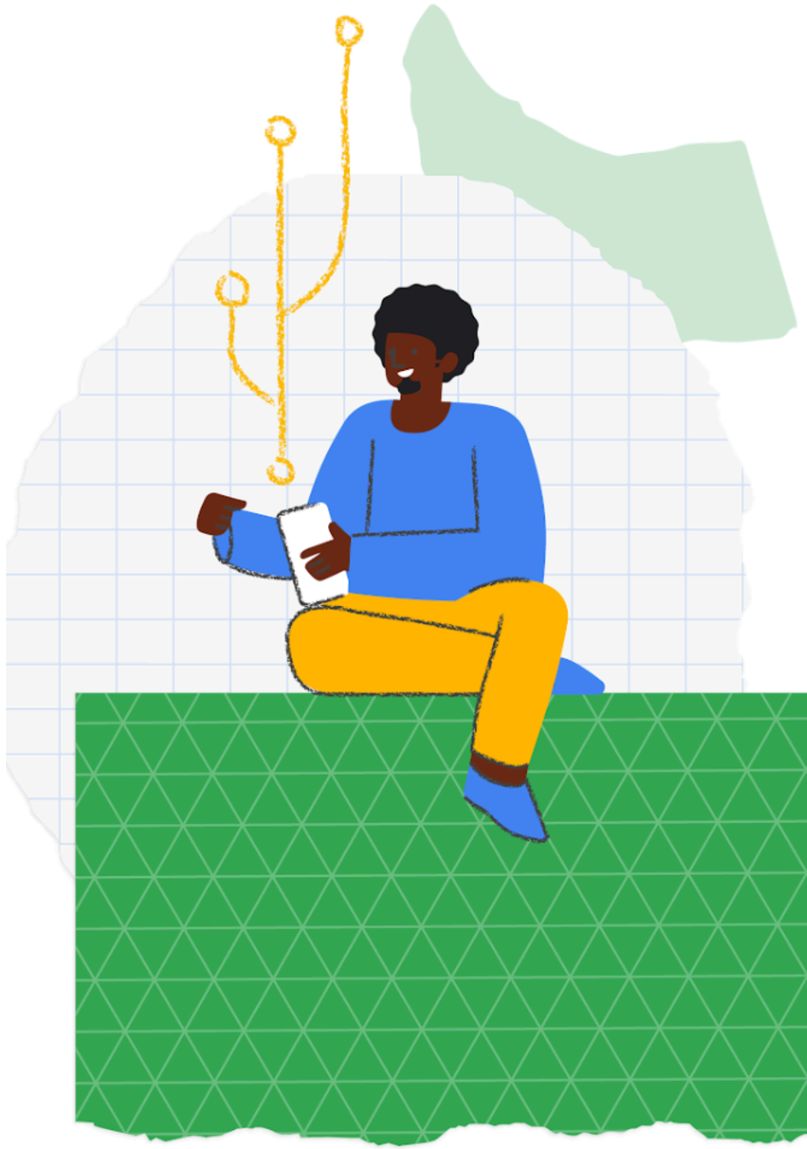
How Unique is it?

Existing Work: Traditional platforms like Khan Academy and Coursera offer static, pre-designed courses that adopt a one-size-fits-all approach, catering primarily to average learners without accommodating individual needs.

- Novelty in Prakashika: Our platform utilizes AI to dynamically adjust lesson plans, pacing, and assessments in real time, ensuring engagement for both advanced and struggling learners.
- Existing Work: Platforms like Duolingo rely on surface-level gamification, while Microsoft Immersive Reader provides basic accessibility features but often lacks comprehensive support for neurodiverse individuals.
- Novelty in Prakashika: We introduce immersive gamification with personalized narratives and adaptive challenges. Our platform also features dyslexia-friendly fonts, focus modes, and multi-sensory content to effectively support all learners.
- Existing Work: Current solutions such as Google Classroom and Byju's emphasize retrospective analytics and standardized curricula, which can limit flexibility and proactive support.
- Novelty in Prakashika: We provide real-time feedback mechanisms for immediate improvements and allow for customized curricula that foster creative and holistic skill development beyond standard frameworks.

Target Audience

- Students with Learning Disabilities – Empowers learners with dyslexia, ADHD, and cognitive challenges through multimodal learning, including text-to-speech, visual aids, and interactive exercises.
- Rural and Underserved Communities – Bridges the educational divide by offering AI-powered learning with offline support, ensuring access to quality education even in low-internet regions.
- School and College Students – Delivers personalized, adaptive learning experiences tailored to individual strengths, weaknesses, and academic levels.
- Teachers and Educators – Equips educators with AI-driven lesson planning, smart assessments, and real-time student insights, enhancing teaching efficiency.
- Parents & Guardians – Provides detailed progress tracking and personalized recommendations, enabling active participation in their child's learning journey.



Implementation Approach

1. Technology Stack
- Frontend:React.js / Next.js for an interactive UI.
- Backend: Node.js / Django for API handling and data processing.
- Database:PostgreSQL / Firebase for user data and progress tracking.
- AI & Machine Learning: Python (TensorFlow/PyTorch) for adaptive learning models.
- Cloud & Hosting: AWS / Google Cloud for scalability and offline access support.

2. Core Functionalities Development
- AI-Powered Adaptive Learning Engine* – Implement ML models that analyze student progress and recommend personalized content.
- Multimodal Learning Support – Integrate text-to-speech, visual aids, and interactive content.
- Gamified Learning System – Design leaderboards, badges, and token rewards to enhance engagement.
- Real-Time AI Chatbot – Deploy NLP-powered chatbot for instant doubt resolution.
- Offline Mode – Implement local storage caching and lightweight AI models for accessibility in low-connectivity areas.

3. Phased Deployment Strategy
- Phase 1 (MVP Development) – Build a functional prototype with core AI-based adaptive learning and interactive content.
- Phase 2 (Beta Testing) – Deploy in selected schools, especially in rural and special-needs communities, to refine features based on feedback.
- Phase 3 (Full-Scale Launch)* – Release publicly with multi-language support and broader accessibility.
- Phase 4 (Continuous Improvement)* – Enhance AI models, add new learning modules, and integrate more gamification elements.

Theme Relevance

Beach hackathon has a theme related to EdTech and Rural Development, Prakashika aligns perfectly with both aspects:

EdTech (Education Technology)

- **Prakashika leverages AI-driven adaptive learning to personalize education, making it more effective and engaging.**
- **It integrates multimodal learning (text, audio, video, interactive content) to cater to diverse learners, including those with special needs.**
- **Features like AI chatbots, gamification, and real-time doubt resolution modernize the learning experience.**

Rural Development

- **Offline Learning Support – Ensures accessibility for students in low-internet and rural areas through lightweight AI models.**
- **Bridging Educational Gaps – Provides quality education to underserved communities, reducing the learning divide.**
- **Language Accessibility – Future scalability to multiple regional languages to support rural learners.**

Additional Info

AI-Powered Study Buddy
Provides real-time answers, lesson summaries, and alternative explanations with multilingual support

This Feature

Gamified Learning Path
Encourages students to engage more with the content by earning badges and leveling up as they interact with the AI assistant.

Along with this

Dynamic Quiz Generator
Uses insights from the AI Study Buddy to tailor quizzes according to the student's strengths and weaknesses, making the learning process more effective.

Integrates with this

- **Increased student motivation and retention rates.**
- Personalized and adaptive learning paths for every student.

Results in this

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