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AI for Bharat Hackathon

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Team Name : CodeYathra

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Problem Statement : AI for Learning & Developer Productivity

ConceptBridge — AI That Explains Complex Topics Using Your Existing Knowledge



Learning Is Broken for Millions

70% of learners struggle with technical concepts because explanations assume prior knowledge they don't have.

Traditional learning is one-size-fits-all — same explanation for a farmer, chef, and engineer.

India has 22 official languages and diverse professional backgrounds, yet learning resources cater to a narrow audience.

Students drop out of technical courses not because they lack ability, but because the bridge between what they know and what they need to learn doesn't exist.

Result: talent is wasted, potential is untapped, India's digital future slows down.

Current Tools Miss the Mark

Google/Wikipedia	Generic, no personalization, overwhelming jargon
YouTube Tutorials	One-way, linear, can't adapt to YOUR background
ChatGPT/Gemini (raw)	Requires knowing how to ask; most learners don't know what they don't know
Online Courses (Coursera, Udemy)	Fixed curriculum, no adaptation to existing knowledge
Textbooks	Dense, intimidating, zero interactivity

No tool asks 'What do you already know?' before teaching you something new.

What Makes Us Different?

Others	ConceptBridge
Explain FROM the topic	Explain FROM the learner's world
Same explanation for everyone	Unique explanation for every individual
Text-heavy, linear	Visual, interactive, conversational
English-first	Bharat-first, multilingual by design
Assume prerequisites	Diagnose and fill prerequisites

"We don't simplify the topic. We translate it into YOUR language of understanding."

- A farmer understands distributed systems through irrigation networks.
- A cricket fan understands load balancing through batting rotation.
- A cook understands algorithms through recipes.

Key Features & Capabilities

What ConceptBridge Can Do



Knowledge Profiling

Builds a dynamic map of what you already know



Analogy Engine

Generates custom analogies from YOUR world (sports, cooking, farming)



Interactive Concept Maps

Visual diagrams connecting new concepts to familiar ones



Gap Analysis

Identifies exactly what you're missing before teaching



Multilingual Support

Hindi, Tamil, Telugu, Bengali, Kannada & more



Adaptive Difficulty

Adjusts complexity in real-time



Spaced Repetition

Optimal intervals for retention



Conversational Learning

Chat-based — learn by asking, not reading

System Architecture — AWS AI Stack



Technology Stack — Built on AWS AI

100% Serverless - 100% AWS - Scales to Millions

AI & ML

Amazon Bedrock

(Foundation Models)

Bedrock Knowledge

Bases (RAG)

Titan Embeddings

(Vectors)

Amazon Comprehend

(NLP)

Amazon Personalize

(Recommendations)

Frontend

React / Next.js

(Framework)

D3.js (Concept Maps)

AWS Amplify (Hosting)

Backend

Python (Language)

AWS Lambda

(Serverless)

API Gateway (REST

APIs)

Database

DynamoDB (NoSQL)

OpenSearch Serverless

(Vector Search)

S3 (Object Storage)

Auth

Cognito (User Auth)

IAM (Access Control)

KMS (Encryption)

Multilingual

Amazon Translate

(Hindi, Tamil, Telugu,

Bengali, Kannada,

Malayalam, Marathi,

Gujarati)

Polly (Text-to-Speech)

Transcribe (Speech-to-

Text)

DevOps

CloudWatch

(Monitoring)

CodePipeline (CI/CD)

X-Ray (Tracing)

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Thank You

