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AI for Bharat Hackathon

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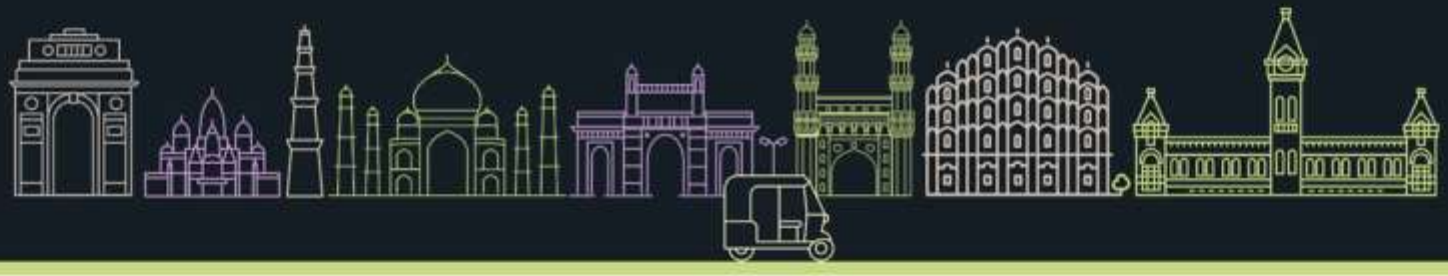


Team Name : CodeYathra

Team Leader Name : Padhmashri S

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

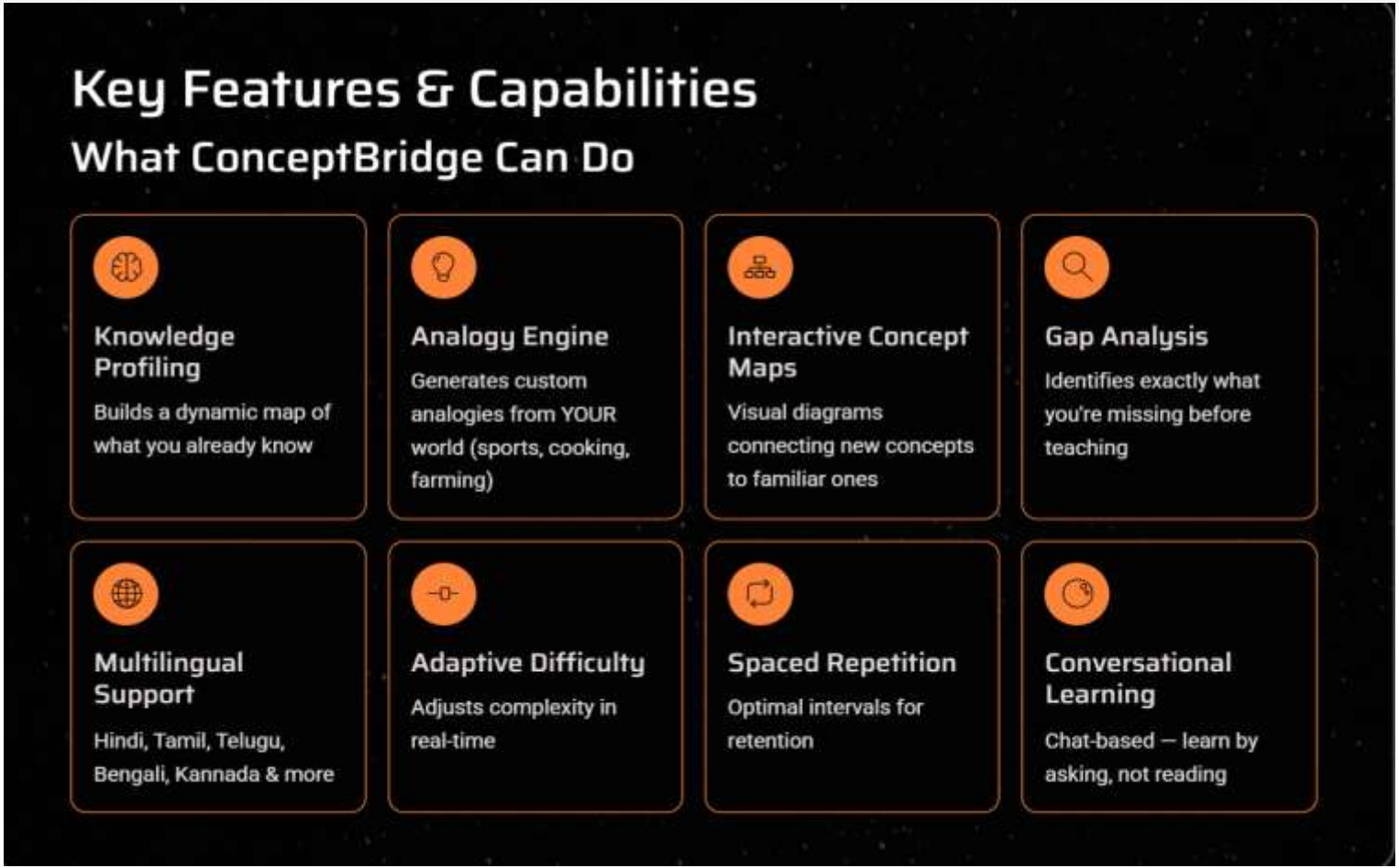
No tool asks 'What do you already know?' before teaching you something new.

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

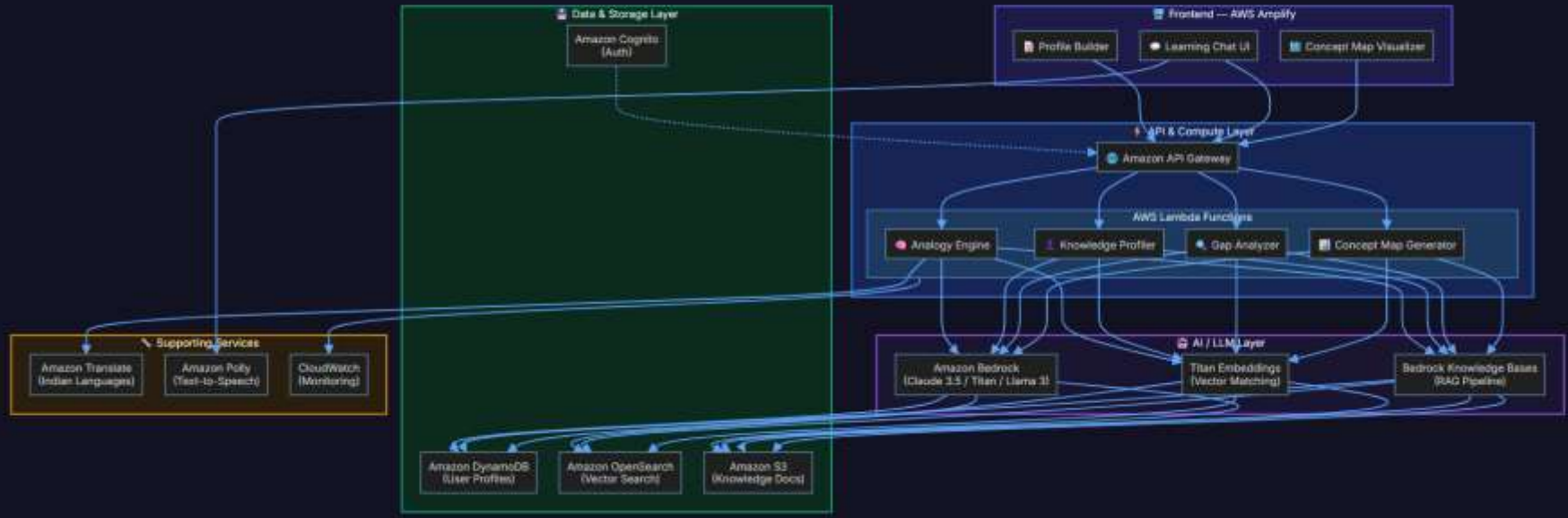
> "We don't simplify the topic. We translate it into YOUR language of understanding."

- 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

1. Architecture Diagram — AWS AI Stack

End-to-end system architecture on AWS



Technology Stack — AWS AI
ConceptBridge is built entirely on AWS serverless architecture
AI & MACHINE LEARNING
Amazon Bedrock
LLM Engine
Bedrock Knowledge Bases
RAG Pipeline
Titan Embeddings
Vector Matching
Amazon Comprehend
NLP Analysis
Amazon Personalize
Recommendations
FRONTEND
React / Next.js
Web Framework
D3.js
Concept Maps
AWS Amplify
Hosting & CI/CD
BACKEND & COMPUTE
Python
Language
AWS Lambda
Serverless Compute
API Gateway
REST APIs
DATABASE & STORAGE
Amazon DynamoDB
NoSQL DB
Amazon OpenSearch
Vector Search
Amazon S3
Object Storage
AUTH & SECURITY
Amazon Cognito
User Auth
AWS IAM
Access Control
AWS KMS
Encryption
MULTILINGUAL & VOICE
Amazon Translate
Indian Languages
Amazon Polly
Text-to-Speech
Amazon Transcribe
Speech-to-Text
MONITORING & DEVOPS
Amazon CloudWatch
Monitoring
AWS CodePipeline
CI/CD
AWS X-Ray
Tracing

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Thank You