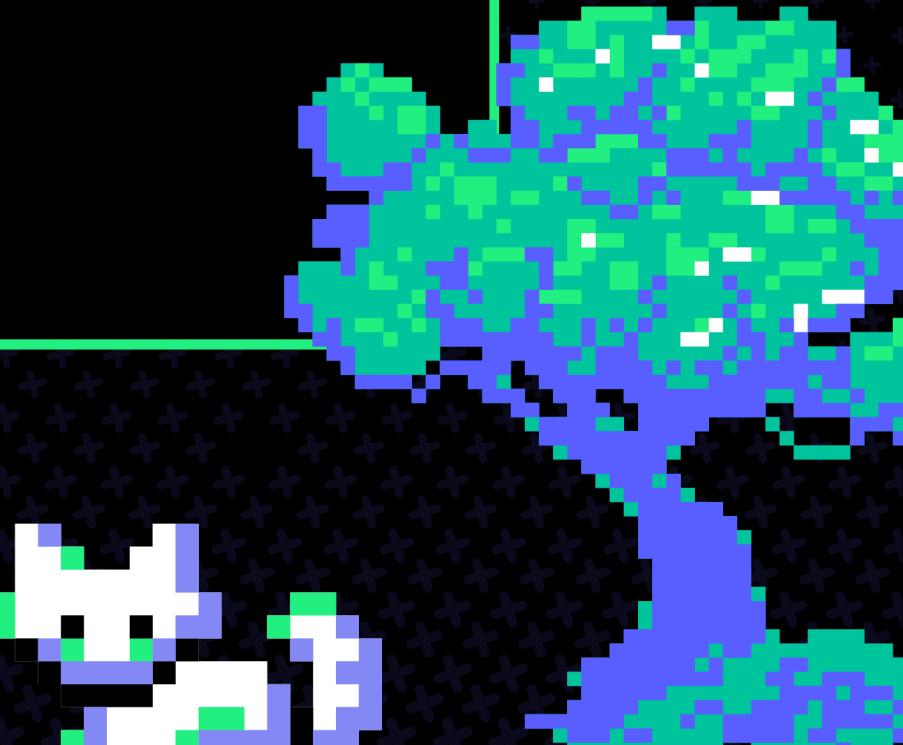


SEEKHO

◆ GEN-AI POWERED NPTEL

START



CONTENTS

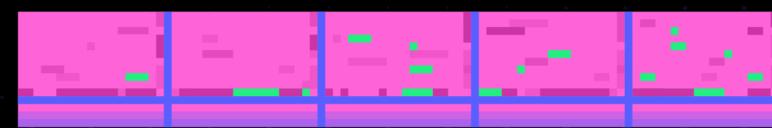
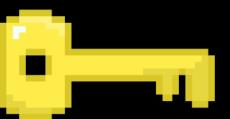
◆ TOPICS COVERED



PROBLEM STATEMENT



SOLUTION



TECH SPECS



DEMO

PROBLEM STATEMENT



IMAGINE

- ◆ YOU ARE A PROFESSOR FROM A PREMIER INSTITUTE IN INDIA WHO HAS BEEN ASSIGNED A TASK TO CREATE A COURSE ON 'RESPONSIBLE AI' FOR UNDERGRAD STUDENTS USING THE NPTEL PLATFORM
- ◆ YOU HAVE TO CREATE THE COURSE LAYOUT, VIDEO CONTENTS, COURSE NOTES AND QUIZ BASED ON THE NOTES APART FROM HANDLING YOUR REGULAR CLASSES AT THE INSTITUTE
- ◆ EVEN IF YOU TAKE OUT YOUR TIME FOR DOING THE ABOVE, YOU ARE CONFINED TO A PARTICULAR LANGUAGE AUDIENCE



IMAGINE

➔ **EVERY STUDENT HAS A UNIQUE WAY OF UNDERSTANDING.** WHAT IF A STUDENT WITH NO PROPER PRE-REQUISITES AS MENTIONED IN NPTEL JOINS YOUR CLASS AND GETS CONFUSED SEEING THE COURSE CONTENT DECIDING TO LEAVE THE COURSE?

➔ WHO SHOULD HE/SHE APPROACH ON GETTING EVERY MINUTE DOUBTS ON THE CREATED COURSE? (BECAUSE NPTEL COURSE DOUBT FORUMS ARE NOT THAT MUCH EFFECTIVE)

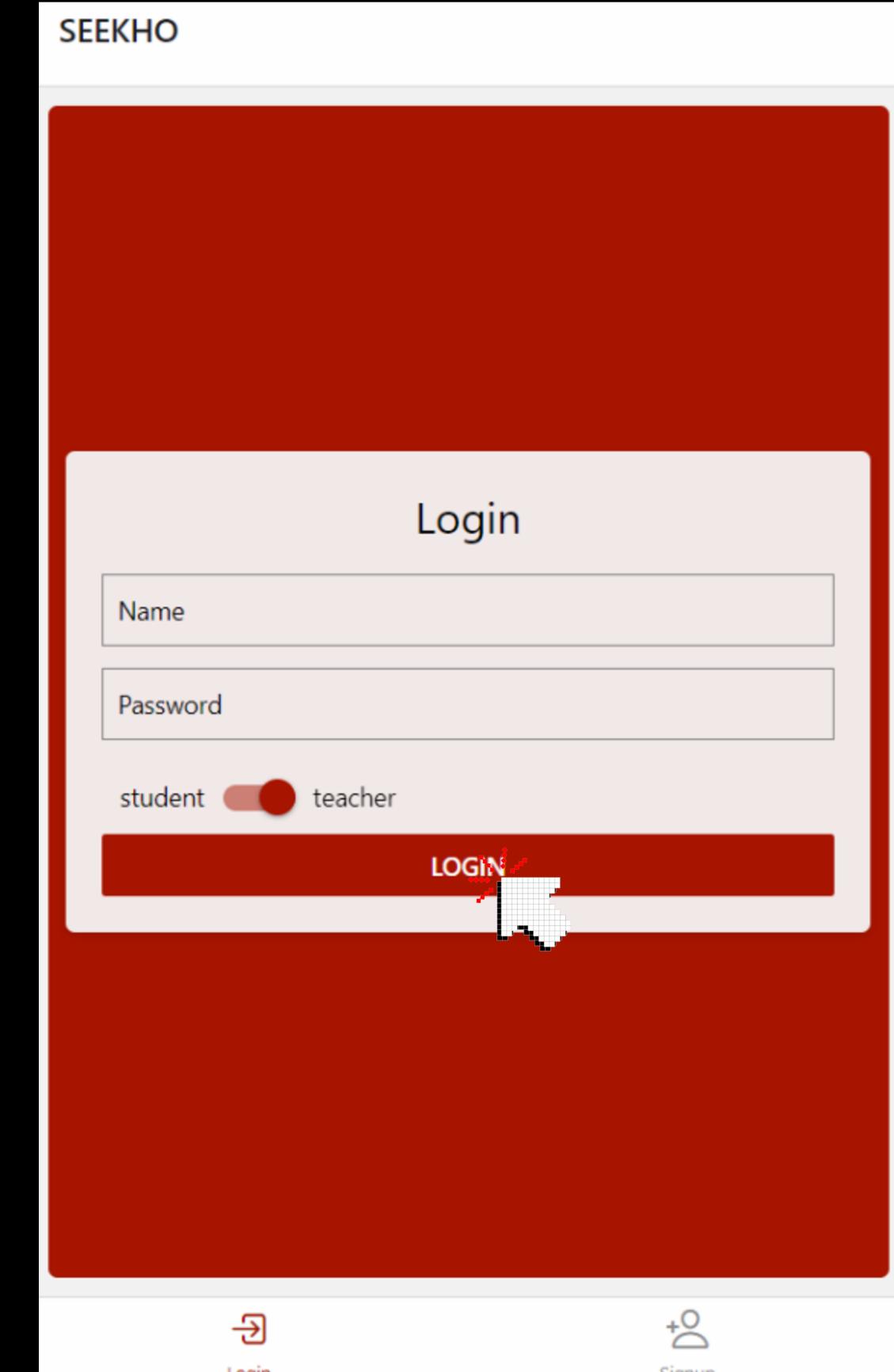


SOLUTION



IDEA

- ➡ WHAT IF I TELL YOU THAT YOU CAN TACKLE ALMOST EVERY PROBLEMS LISTED EARLIER USING A SINGLE CLICK ON OUR PLATFORM SO THAT YOU FOCUS ON THE MAIN ASPECT (VIDEO BASED ONLINE TEACHING) AND REST ASSURED OF THE SUBSIDIARIES?
- ➡ WE PRESENT 'SEEKHO' : A GENERATIVE-AI POWERED NPTEL-THEMED ONLINE COURSE CREATION PLATFORM TO GENERATE ANY COURSE IN **UNDER 5-7 MINUTES** (PROVIDED THE VIDEO CONTENT)
- ➡ SEEKHO IS PLATFORM INDEPENDENT AND CAN BE ACCESSED THROUGH BOTH MOBILE AND WEB APPLICATIONS



KEY FEATURES

◆ GENERATING COURSE LAYOUT, NOTES AND QUIZ.

◆ EXPLAINING THE NOTES CONCEPT IN VARIED DIFFICULTY WITH ANIMATIONS.

◆ SOCRATIC METHOD-BASED DOUBT SOLVER.

◆ CONTENT TRANSLATION TO REMOVE LANGUAGE BARRIER.

➔ GENERATING COURSE LAYOUT, NOTES AND QUIZ.

- ➔ LAYOUT GENERATOR : SEEKHO GENERATES THE LAYOUT OF THE COURSE GIVEN THE NAME AND CONTEXT OF THE COURSE
- ➔ NOTES GENERATOR : NOTES ARE GENERATED USING THE TRANSCRIPT EXTRACTED FROM THE VIDEO CONTENT PROVIDED BY TEACHER IN 3 VARIED DIFFICULTIES
- ➔ QUIZ GENERATOR : A WEEKLY QUIZ IS ALSO GENERATED TO EVALUATE THE PROGRESS OF STUDENTS IN THE COURSE

Linear Algebra

Description

This course provides a comprehensive and rigorous treatment of linear algebra, a fundamental mathematical framework with applications across countless disciplines. We will delve into the theoretical underpinnings of vector spaces, linear transformations, matrices, eigenvalues, and eigenvectors. Beyond the theoretical framework, we will explore practical applications of linear algebra in various fields, emphasizing computational techniques and problem-solving strategies.

Grading Policy

- Assignments (40%): Weekly assignments will be given to assess understanding of the material.
- Quizzes (20%): Short quizzes will be conducted periodically to test comprehension of key concepts.
- Midterm Exam (20%): A comprehensive midterm exam will cover the first half of the course material.



overview



week

➔ EXPLAINING THE NOTES CONCEPT IN VARIED DIFFICULTY WITH ANIMATIONS.

- ➔ UNDERGRAD : BASE NOTES CONTAINING EXAMPLES; MAINLY DESIGNED FOR UNDERGRADUATE STUDENT HAVING KNOWLEDGE OF PRE-REQUISITES
- ➔ TEENAGER : NOTES CONTAINING EXAMPLES AND ANIMATION; MAINLY DESIGNED FOR STUDENTS WHO ARE UNAWARE OF THE TOPIC AND LACK PRE-REQUISITES
- ➔ EXPERT : NOTES CONTAINING COMPLEX TERMS; MAINLY DESIGNED FOR STUDENTS WHO HAVE A LITTLE IDEA OF UNDERGRAD COURSE AND WANT TO EXPLORE A FURTHER MORE

Week 1: Vector Spaces

Undergrad

English

multiplicative identity, and distributive properties.

Show that $V = P_2$ (the set of all real valued polynomials of degree ≤ 2) and $F = \mathbb{R}$ (real scalars) with standard definitions of addition and scalar multiplication forms a vector space.

The "vectors" are polynomials of degree at most 2.
An example: $p = a_2x^2 + a_1x + a_0$
with a_0, a_1 , and $a_2 \in \mathbb{R}$

Then vector addition will be polynomial addition (combining like terms).

For p and $q \in P_2$
 $p = a_2x^2 + a_1x + a_0$ $q = b_2x^2 + b_1x + b_0$
 $p + q = (a_2 + b_2)x^2 + (a_1 + b_1)x + (a_0 + b_0)$

Scalar multiplication will work like this:

For $p \in P_2$ and real scalar k ,
 $kp = k(a_2x^2 + a_1x + a_0) = ka_2x^2 + ka_1x + ka_0$

Figure: The image shows a worked-out example of a vector space. The example demonstrates that the set of all real-valued polynomials of degree less than or equal to 2, with standard definitions of addition and scalar multiplication, forms a vector space. It explains that the "vectors" are polynomials of degree at most 2, and it defines vector addition and scalar multiplication operations using the standard definitions of polynomial addition and scalar multiplication. It also lists the axioms for a vector space and shows how



notes



subtopic



quiz

➡ SOCRATIC METHOD-BASED DOUBT SOLVER.

- ➡ TEACHERS OFTEN CANNOT PROVIDE INDIVIDUAL ATTENTION TO EVERY STUDENT DURING CLASS, LEADING TO UNANSWERED DOUBTS AND CONFUSION.
- ➡ SOCRATIC METHOD BASED DOUBT SOLVING IS ONE OF THE MOST EFFECTIVE SOLUTION TO ENGAGE IN HEALTHY CONVERSATION WITH STUDENTS AND PROVIDING THEM A THINKING PATTERN TO RESOLVE THE DOUBT. BUT IT IS CHALLENGING TO SCALE.
- ➡ USING GEN-AI, WE TACKLED THIS ISSUE AND CREATED A 1:1 DOUBT SOLVING SESSION WITH THE STUDENTS.



➡ CONTENT TRANSLATION TO REMOVE LANGUAGE BARRIER.

➡ SARVAM API'S ARE MUCH HELPFUL IN IMPROVISING OUR APPROACH TO MULTI-LINGUAL DOMAIN

➡ WITHIN A SINGLE CLICK, SEEKHO CONVERTS THE BOTH THE TEXTUAL AND VIDEO DATA INTO THE STUDENT PREFERRED LANGUAGES

➡ ALSO, THERE IS A VOICEOVER FEATURE ADDED IN THE PLATFORM TO BE APPLIED OVER THE TEXTUAL DATA

Week 1: Introduction to Big Data

Undergrad

Hindi

बिग डेटा का परिचय यह व्याख्यान बताता है कि बिग डेटा क्या है, इसकी विशेषताएं, इसे कैसे संग्रहीत और संसाधित किया जाता है, और इसके उपयोग। बिग डेटा क्या है? बिग डेटा एक ऐसा शब्द है जिसका उपयोग डेटा के बड़े और जटिल सेटों का वर्णन करने के लिए किया जाता है जिन्हें पारंपरिक तरीकों का उपयोग करके संभालना और विश्लेषण करना मुश्किल होता है। बिग डेटा के उदाहरण: **स्मार्टफोन डेटा: **एक स्मार्टफोन उपयोगकर्ता टेक्सिंग, कॉलिंग, ईमेल, फोटो लेने, वीडियो देखने, ऑनलाइन खोज और संगीत सुनने जैसी गतिविधियों के माध्यम से हर महीने लगभग 40 एक्साबाइट डेटा बनाता है। अरबों स्मार्टफोन उपयोगकर्ताओं के साथ, डेटा की मात्रा बहुत अधिक है। इंटरनेट डेटा: हर मिनट, स्पैचेट पर लाखों स्पैच साझा किए जाते हैं, लोग गूगल पर खोज करते हैं, फेसबुक पर लॉग इन करते हैं, यूट्यूब पर वीडियो देखते हैं और ईमेल भेजते हैं। डेटा का यह निरंतर प्रवाह बिग डेटा के विकास में बहुत योगदान देता है। बिग डेटा के 5 बनाम बिग डेटा को पाँच Vs द्वारा परिभाषित किया गया है: वॉल्यूम: यह बड़ी मात्रा में बनाए गए डेटा को संदर्भित करता है। उदाहरण के लिए, दुनिया भर के अस्पताल और क्लिनिक हर साल



notes



subtopic

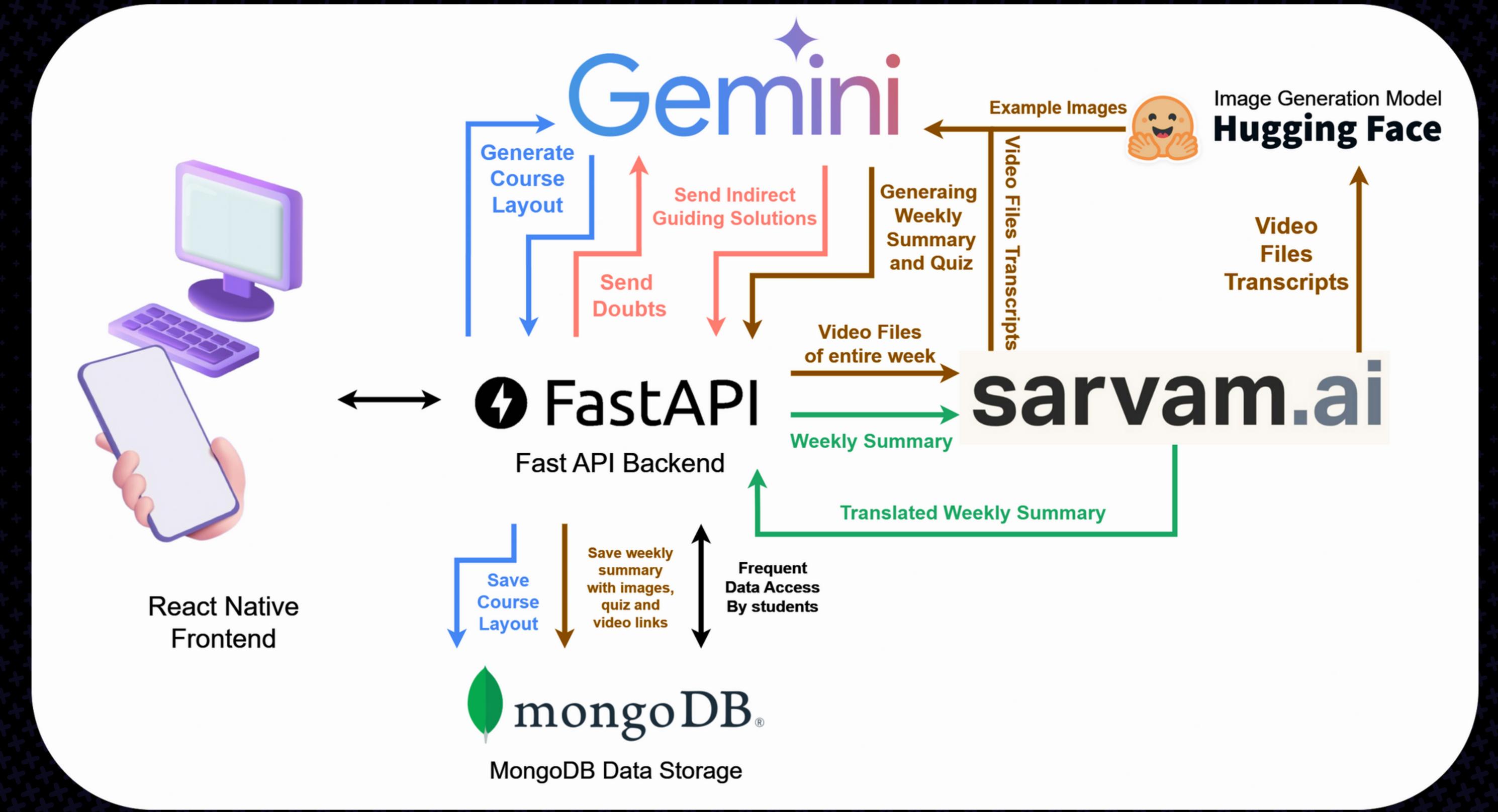


quiz

TECH SPECS



ARCHITECTURE



MODEL USED

- ◆ GEMINI :
 - 1.5 PRO - NOTES, LAYOUT AND QUIZ GENERATOR
 - 1.5 FLASH - SOCRATIC BASED DOUBT SOLVER
- ◆ SARVAM :
 - MAYURA:V1 - TRANSLATING
 - BULBUL:V1 - VOICEOVER
 - SAARAS:V1 - TRANSCRIPT GENERATOR
- ◆ HUGGING FACE :
 - DIGITAL-DOODLE-CARTOON-WORSTIMEVER-ARTSTYLE-218MB-XL-LORA - GENERATING DOODLE BASED ANIMATIONS
- ◆ SILERO VOICE ACTIVITY DETECTION(VAD) : AUDIO SYNCHRONIZATION BETWEEN VIDEOS OF DIFFERENT LANGUAGES

FRONTEND

- ❖ REACT NATIVE

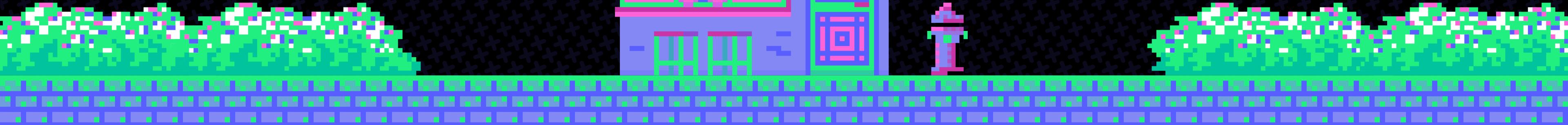
BACKEND

- ❖ FASTAPI (HOSTED ON GOOGLE CLOUD PLATFORM)
- ❖ ADDITIONAL: GOOGLE SEARCH ENGINE (DOWNLOADING IMAGES)

DATABASE

- ❖ MONGODB

DEMO



THANK YOU!