B.Tech. CSE (III YEAR - VI SEM) (2025-2026)

DEPARTMENT OF COMPUTER ENGINEERING & APPLICATIONS

GLA University

17km Stone, NH-19, Mathura-Delhi Road P.O. Chaumuhan, Mathura - 281406 (Uttar Pradesh) India

Project Title: Migoo AI — Guidance, Simplified.

Team Member 1 : Keshav Agrawal UR : 2315800043

Team Member 2 : Parmeet Singh UR : 2315800059

Mentor Name: Dr. Ram Manohar Nisarg

Signature:

Project Synopsis: Migoo AI — Guidance, Simplified.

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0. Cover

- **Project title:** Migoo AI — Guidance, Simplified.
- **Team name & ID:** Team Migoo AI (T4)
- **Institute / Course:** GLA UNIVERSITY, Semester-Project
- **Version:** v1.0
- **Date:** 2nd February 2026

Revision history

Version	Date	Author	Change
v0.1	15 Jan 2026	Keshav Agrawal	Initial draft
v1.0	2 Feb 2026	Team Migoo AI	Complete synopsis with technical specifications

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1. Overview

- **Problem statement:** Current learning and content creation systems require **manual scripting, editing, and platform-specific optimization**. Educators and creators struggle to convert topics or long-form content into **structured courses, short-form videos, and exam-ready material**, leading to inefficiency and content inconsistency.
- **Goal:** To build **Migoo**, an AI-powered platform that converts **any topic or long-form content into structured courses, short learning videos, exam material, handwritten notes, and auto-published content**, using a single unified workflow.
- **Non-goals:** Live video recording, Advanced animation rendering, Full LMS integration in v1, Autonomous AI agents
- **Value proposition:** Single-input multi-output learning automation, reduced manual effort, fast content generation, workflow-based publishing, and scalability for education-focused use cases.

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2. Scope and Control

2.1 In-scope

AI-based course structure generation, Shorts / reels generation from courses, YouTube video to shorts conversion, AI-generated exam material, Handwritten-style PDF notes (Proposed), Workflow automation and scheduling, Web-based deployment.

2.2 Out-of-scope

Live classroom interaction, Multi-language dubbing, Advanced analytics dashboard, Messaging platform integrations

2.3 Assumptions

- Users have modern browsers, Stable internet or local inference setup, Usage in academic and content-creation environments

2.4 Constraints

- Semester timeline, Open-source AI models, Limited compute resources, Initial single-language support

2.5 Dependencies

- Ollama (Local AI runtime), Open-source LLMs (Llama / Qwen / DeepSeek), FastAPI / Flask (Backend), React.js (Frontend)

2.6 Acceptance criteria and sign-off

- GIVEN a topic or content
- WHEN processed by Migoo
- THEN structured courses, shorts, and notes are generated within seconds
- Content relevance ≥ 85%
- **Sign-off:** Mentor approval after successful demo

Sign-off table

Stakeholder	Role	Decision area	Signature/Approval	Date
Dr. Ram Manohar Nisarg	Mentor	Scope, final acceptance	Approved	3 Feb 2026
Keshav Agrawal	Product Lead	Release readiness	Approved	3 Feb 2026

3. Stakeholders and RACI

Activity	Responsible (R)	Accountable (A)	Consulted (C)	Informed (I)
Requirements	Keshav	Keshav	Mentor	Team
Design	Parmeet	Keshav	Mentor	Team
Implementation	Keshav, Parmeet	Keshav	—	Team
Testing	Parmeet	Keshav	Mentor	Team
Release	Keshav	Keshav	Mentor	Dept

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4. Team and Roles

Member	Role	Responsibilities	Key skills	Availability	Contact
Keshav Agrawal	Tech Lead & Backend	AI workflows, backend APIs, system architecture	GenAI, Backend	10 hrs/wk	keshav.agrawal_cs.h23@gla.ac.in
Parmeet Singh	Frontend & Testing	UI development, workflow integration, testing	React, UI/UX	8 hrs/wk	parmeet.singh_cs.h23@gla.ac.in

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5. Week-wise Plan and Assignments

Week	Dates	Milestones	Keshav (Lead)	Parmeet (Backend / AI)	Deliverables	Status
1	3–9 Feb	Requirements Freeze	Finalize scope, core modules & use-cases	Define AI inputs/outputs, content formats	Draft SRS, Tech Stack doc	Planned
2	10–16 Feb	Architecture & DB Design	Architecture & workflow review	DB schema (sessions, content pipeline)	ERD, API Spec v1	Planned
3	17–23 Feb	Backend Scaffolding	Risk analysis & unblock	AI pipeline setup (Ollama + LLM), course generator	Core backend services (Course Gen)	Planned
4	24 Feb–2 Mar	Frontend Scaffolding	Weekly sync & feature review	API integration & testing	UI screens, dashboard layout	Planned

Week	Dates	Milestones	Keshav (Lead)	Parmeet (Backend / AI)	Deliverables	Status
5	3–9 Mar	Feature Set A	Scope adjustment if needed	Shorts/Reels generator, exam material logic	End-to-end demo (Course + Shorts)	Planned
6	10–16 Mar	Feature Set B	Define KPIs & optimization goals	Handwritten notes generator, workflow engine	Demo: Notes + Workflow automation	Planned
7	17–23 Mar	Hardening & Testing	Risk burn-down & final checks	Backend bug fixes & optimization	Test report + Debug log	Planned
8	24–30 Mar	Release & Presentation	Final sign-off, project deck preparation	Deployment, documentation & configs	v1.0 Release + Project Deck	Planned

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6. Users and UX

6.1 Personas

- **Student Learner:** Wants short, structured learning content
- **Educator:** Wants fast course creation
- **Content Creator:** Wants repurposable short-form content

6.2 Top user journeys

- Home → Enter Topic / YouTube Link → AI Processing → Course / Shorts / Notes
  KPI: Response time ≤ 25s, engagement ≥ 85%

6.3 User stories

- As a learner or educator, I want to convert a topic into structured learning content and revision material so that I can save time and improve learning efficiency.

6.4 Accessibility & localization

- Simple text-based interaction
- Clean UI for ease of use
- English language support (v1)

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7. Market and Competitors

7.1 Competitor table

Competitor	Product	Target Users	Key Features	Pricing	Strengths	Weaknesses	Our Differentiator
ChatGPT	AI Assistant	Students, Educators	Text-based explanations, Q&A	Freemium	Fast responses	No video/course automation	Migoo generates structured courses & videos
Google Gemini	AI Assistant	General users	Knowledge-based answers	Freemium	Strong search integration	No learning workflow	Migoo focuses on learning + content creation
Notion AI	AI Workspace	Professionals, Students	Notes & summaries	Paid	Good organization	No video/shorts generation	Migoo produces video-ready content
Manual Course Creators	YouTube / LMS	Educators	Custom teaching style	Free / Paid	High quality	Time-consuming	Migoo automates entire pipeline

7.2 Positioning

- **Unique angle:** Migoo uniquely combines learning automation, content repurposing, and auto-distribution into a single AI-powered workflow.
- **Measurable delta:** Reduces course creation time by 70–80%, converts one topic into multiple formats automatically, designed for education-first use cases

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8. Objectives and Success Metrics

- **O1 Onboarding:** Course or content generation start time ≤ **3 seconds**
- **O2 Content Quality:** Generated learning content relevance ≥ **85%**
- **O3 Automation Efficiency:** One input generates multiple outputs successfully
- **O4 Accessibility:** No major usability issues in core workflows

9. Key Features

Feature	Description	Priority	Dependencies	Acceptance Criteria
AI Course Generator	Converts topic into structured chapters	Must	Ollama, LLM	GIVEN a topic WHEN processed THEN course is generated
Shorts / Reels Generator	Converts lessons into short videos	Must	LLM, Prompt Engine	Shorts generated with key concepts
YouTube to Shorts	Extracts concepts from long videos	Must	Transcript parser	Shorts reflect main ideas
Exam Material Generator	Creates questions & revision notes	Should	LLM	Exam-ready content generated
Handwritten Notes	AI handwritten-style PDFs	Should	Font engine	Notes are readable & exam-friendly

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10. Architecture

10.1 High-level

- **Frontend:** React.js for dashboard, course input, workflow control
- **Backend:** FastAPI / Flask for AI orchestration, workflows, APIs
- **AI Engine:** Ollama (Local) with Open-source LLMs (Llama / Qwen)
- **Content Processing:** Prompt pipelines for course, shorts, notes & exam material

10.2 API spec snapshot

Endpoint	Method	Auth	Purpose	Request Schema	Response Schema	Codes
/generate-course	POST	—	Course generation	{topic: string}	{chapters: list}	200, 400
/generate-shorts	POST	—	Shorts generation	{content: text}	{shorts: list}	200, 400
/generate-notes	POST	—	Handwritten notes	{topic: string}	{pdf: file}	200, 400
/execute-work	POST	—	Automation exe.	{config: json}	{status: string}	200, 400

10.3 Config and secrets

- .env file for environment variables, API keys and model configs stored securely, Sensitive files Git-ignored

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11. Data Design

11.1 Data dictionary

Entity	Field	Type	Null?	Allowed Values	Source	Notes
User	input	String	No	—	User	Primary Input
Course	content	Text	No	—	System	Generated Output
Shorts	clip	Text	No	—	System	Short-form Content
Notes	pdf	File	No	—	System	Handwritten Notes
Workflow	status	String	No	pending / completed	System	Execution State

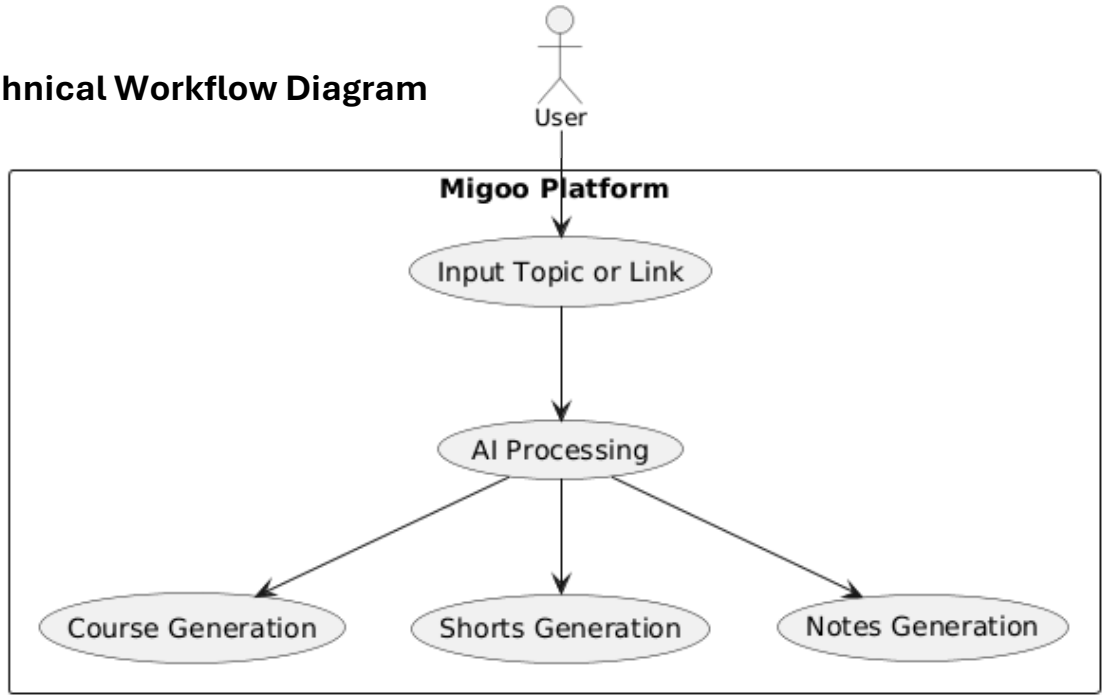
11.2 Schemas and migrations

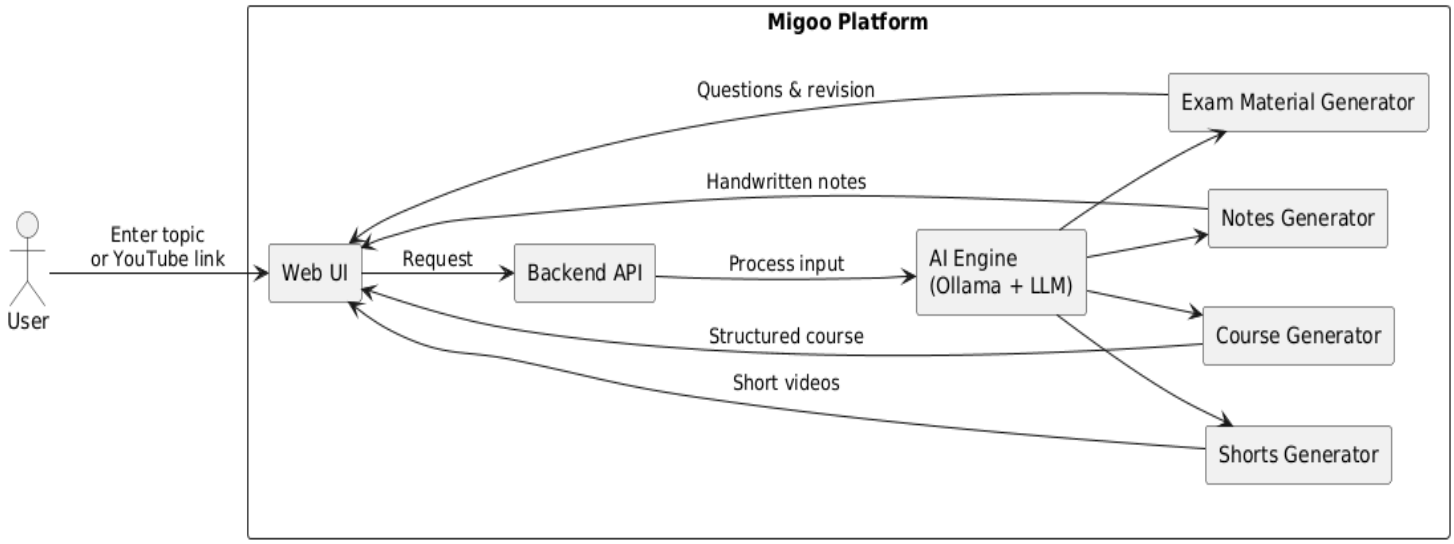
- Minimal **session-based schema** used
- No permanent user data storage
- Generated content exists only for the active session
- Stateless backend design for scalability

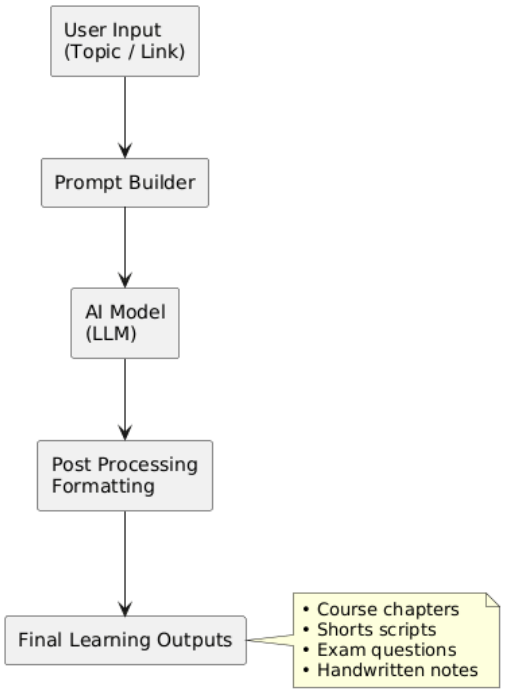
11.3 Privacy, retention, backup/DR

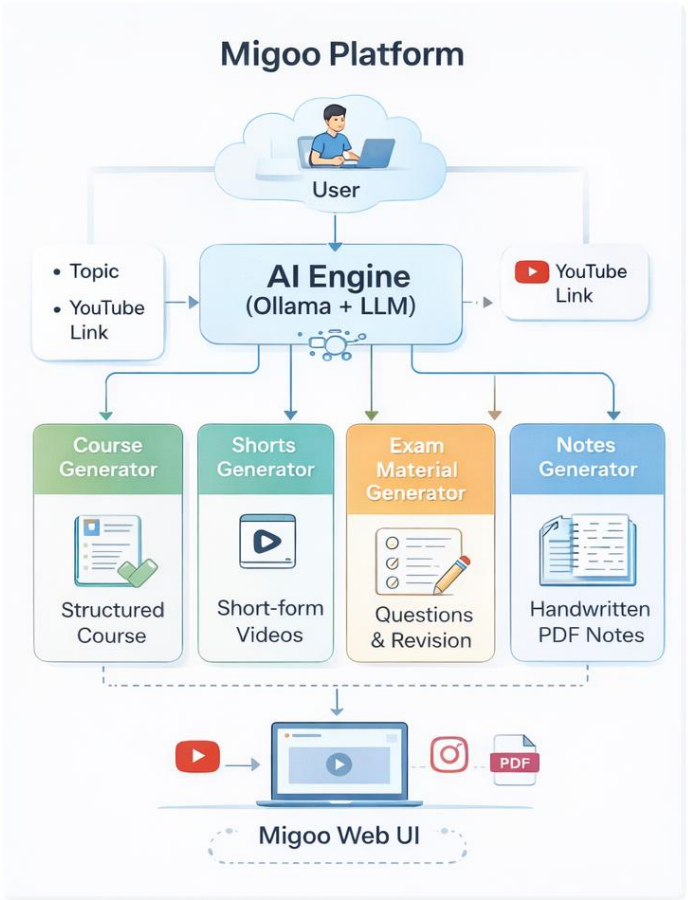
- Local and session-level data storage only
- Generated content retained **only during session lifetime**
- No external data transmission without user action
- No personal user information stored

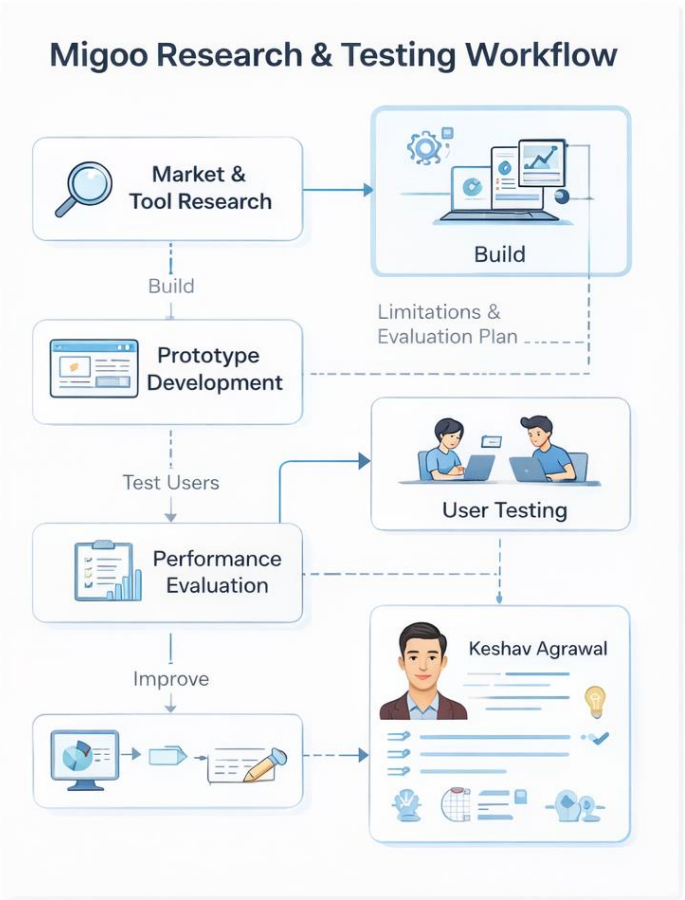
- **12. Technical Workflow Diagram**

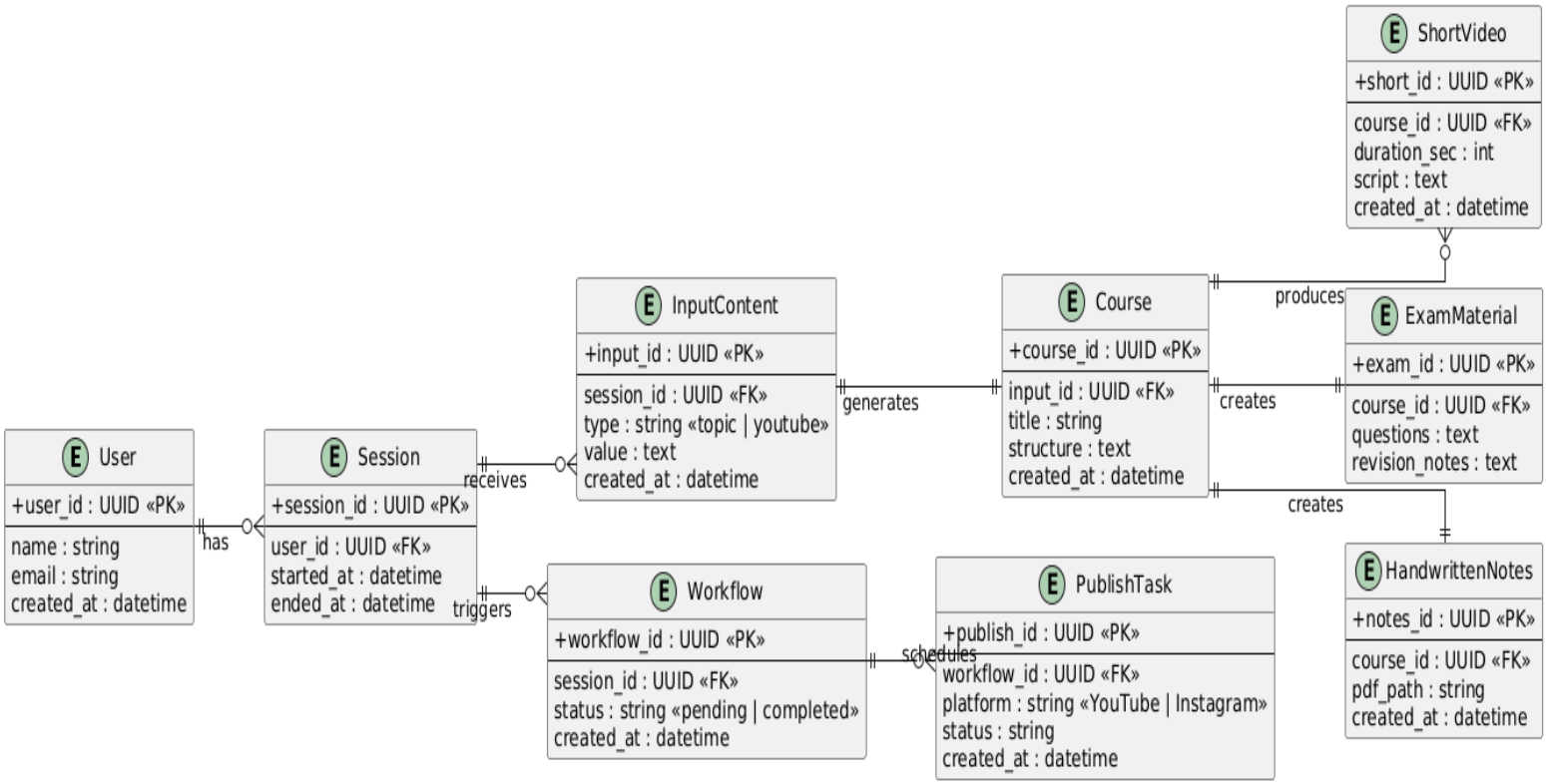







Migoo Platform
User
• Topic
• YouTube Link
AI Engine
(Ollama + LLM)
YouTube Link
Course Generator
Structured Course
Shorts Generator
Short-form Videos
Exam Material Generator
Questions & Revision
Notes Generator
Handwritten PDF Notes
PDF
Migoo Web UI


Migoo Research & Testing Workflow
Market & Tool Research
Build
Build
Limitations & Evaluation Plan
Prototype Development
Test Users
User Testing
Performance Evaluation
Improve
Keshav Agrawal


ShortVideo
+short_id : UUID «PK»
course_id : UUID «FK»
duration_sec : int
script : text
created_at : datetime
produces
InputContent
+input_id : UUID «PK»
session_id : UUID «FK»
type : string «topic | youtube»
value : text
created_at : datetime
generates
Course
+course_id : UUID «PK»
input_id : UUID «FK»
title : string
structure : text
created_at : datetime
creates
ExamMaterial
+exam_id : UUID «PK»
course_id : UUID «FK»
questions : text
revision_notes : text
creates
User
+user_id : UUID «PK»
name : string
email : string
created_at : datetime
has
Session
+session_id : UUID «PK»
user_id : UUID «FK»
started_at : datetime
ended_at : datetime
receives
triggers
Workflow
+workflow_id : UUID «PK»
session_id : UUID «FK»
status : string «pending | completed»
created_at : datetime
schedules
PublishTask
+publish_id : UUID «PK»
workflow_id : UUID «FK»
platform : string «YouTube | Instagram»
status : string
created_at : datetime
HandwrittenNotes
+notes_id : UUID «PK»
course_id : UUID «FK»
pdf_path : string
created_at : datetime

13. Quality: NFRs and Testing

- AI output relevance and accuracy testing
- Workflow execution validation
- UI usability testing
- Performance testing for multiple requests
- Manual review of generated learning content

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14. Security and Compliance

- Secure handling of AI model responses
- No storage of personal or sensitive user data
- Environment variables protected via configuration files
- Local inference option reduces external dependency risks

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15. Delivery and Operations

- Deployed using **Vercel / Render** for public access
- Logs monitored for error detection and performance analysis
- Easy redeployment using containerized or script-based setup

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16. Risks and Mitigations

- **Risk:** Slow AI response time, *Mitigation:* Optimized prompts and lightweight models
- **Risk:** Large input content size, *Mitigation:* Chunked processing approach
- **Risk:** Platform publishing failures, *Mitigation:* Retry and fallback mechanisms

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17. Research and Evaluation

- Study of AI-based learning platforms and content tools
- Comparison with manual course creation workflows

- Evaluation through test users and generated content quality
- Limitations identified for future improvement

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18. Appendices

- **Glossary:**
  - LLM - Large Language Model
  - GenAI: Generative Artificial Intelligence
  - Workflow Engine: Automated content execution pipeline
  - KPI – Key Performance Indicator

- **References:** Course Handbook, React Documentation, Ollama Documentation, Open-source LLM Documentation