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A 2-days National Level Hackathon on AI in education

E-learning and Content Recommendation

code Storm
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www.samadhan.sistec.ac.in/

Problem Statement

- Current e-learning is one-size-fits-all
- Different pace & learning styles not addressed
- Students waste time searching for right resources
- Teachers struggle to give personalized attention
- Remote classes lack engagement & tracking

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Proposed Solution

- AI-powered system recommends videos, notes, quizzes, exercises
- Adaptive engine adjusts difficulty based on student progress
- Personalized dashboards for students & teachers
- Supports remote + blended learning effectively

Approach & Methodology

1. Collect student data → quiz results, performance, preferences
2. Analyze data & build learner profile
3. Apply AI Recommendation Engine:
   - Collaborative filtering (similar learners)
   - Content-based filtering (similar topics)

Deliver personalized resources (videos, notes, quizzes)

5. Track learning progress via dashboards
6. Feedback loop → system improves continuously

Key Features

Personalized recommendations

- Student progress dashboard
- Smart reminders & notifications
- Teacher dashboard for monitoring
- Multi-format content (video, notes, quizzes)
- Offline access support

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Target Users and Expected Use Cases

Target Users

- Students (school/college/self-learners).
- Teachers & mentors.
- Institutes/EdTech platforms.

Use Cases

- Students → Get content suited to their level.
- Teachers → Track & assign adaptive content.
- Institutes → Improve results & engagement.

Tech Stack

- Frontend: React JS / HTML, CSS, JavaScript
- Backend: Django / Flask (REST APIs)
- Database: MySQL / MongoDB
- AI/ML: Python (Scikit-learn, TensorFlow, NLP)
- Algorithms: Collaborative + Content-based filtering
- APIs: YouTube API (videos), Quiz API (auto quizzes)
- Hosting: AWS / Azure / GCP

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AI Technologies & Implementation Approach

AI Technologies

- Machine Learning (Collaborative + Content-based filtering).
- NLP for notes & quiz generation.
- Data analytics dashboards.

Implementation Approach

- Collect student data.
- Build recommendation engine.
- Integrate with frontend UI.
- Pilot testing with sample users.

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Expected Outcomes

- Students → Right content at right time → Better results
- Teachers → Easy monitoring & less workload
- Institutes → Higher engagement & academic success
- Society → Wider access to quality education

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Conclusion

- Solution bridges gap in personalized e-learning
- Benefits students, teachers, and institutions
- Future-ready step towards AI-driven education

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