






ENGAGEMENT & RETENTION INTELLIGENCE LAYER

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PROBLEM & IMPACT

- **High course drop-off rates** reduce learning outcomes and revenue.
- Learners lose motivation due to **lack of personalization** and timely interventions.
- **Admins lack real-time visibility** to spot at-risk learners early.
- Impact: lower completion, poor NPS, higher acquisition costs.

SOLUTION OVERVIEW

- **Real-time dashboard** (Learner + Admin) showing engagement & risk scores.
- **ML-powered risk prediction:** continuous feature streaming -> risk score.
- **Automated intervention engine:** reminders, micro-assessments, peer challenges, mentor connects.
- Outcome: timely, **personalized** nudges to reduce drop-offs and improve completion.

ARCHITECTURE AND DATA FLOW

1. **Data sources:** activity logs, quiz results, forum posts, video progress, calendar.
2. **ETL & Feature Store:** sessionization, trend features, temporal windows.
3. **LLM Service:** Gemini API integration for engagement prediction & reasoning.
4. **Intervention Engine:** rules + policy + A/B testing.
5. **Frontend:** Learner dashboard & Admin command center (React + WebSockets).

INTERVENTION STRATEGY

- **Input signals sent to Gemini API:** last activity, quiz scores, engagement logs, forum interactions.
- **Model: Gemini API** analyzing learner activity patterns in real time; LLM-generated engagement insights (interpreted into risk categories i.e Low/Med/High).
- Interventions mapped to risk band and learner preferences:
 - **Low:** gentle nudge (in-app notification, celebrate progress)
 - **Medium:** micro-assessment, peer challenge suggestion
 - **High:** mentor connect + personalized email + instructor outreach

DEMO PLAN, METRICS & NEXT STEPS

- **Demo:** 3 scenarios (High-risk learner, Recovering learner, Engaged learner) with live dashboard & triggered nudges.
- **Success metrics for demo:** immediate response (nudge open/click), 7-day re-engagement rate, completion uplift.
- **Next Steps:** A/B test interventions, scale to multiple cohorts, add adaptive content recommendations.
- **Ask:** feedback, data access for richer features, mentor for ML tuning.



THANK YOU