AI-Powered Personalized Learning Assistant - Recommendation Design

1. Signals Driving Personalization

Signal	Description	Why it Matters
Module Type (Video, Quiz, Article, Webinar)	Format of learning content	Helps match learner preferences to content types they engage with most
Time Spent on Module	Duration spent per module	Indicates depth of engagement, long engagement can signal interest or difficulty
Completion Status	Completed vs. started modules	Reveals motivation and persistence, useful for targeting support or recommendations
Quiz Scores	Learner performance on assessments	Identifies knowledge gaps, drives remedial content recommendations
Module Rating	Feedback given by learner	Reflects learner satisfaction and helps prioritize highly rated modules
Department/Role	Learner's position or team	Helps contextualize learning needs based on role-specific skills
Historical Engagement Patterns	Past learning behavior	Enables trend-based recommendations and segmentation
Learning Style (Inferred)	Short/long modules, interactive preference	Supports format-based personalization (e.g., Fast Finisher - short modules)

2. Recommendation Logic

Visual Learners

- Rule: If learner prefers visual style - recommend Video modules with rating ≥ 4.
- Justification: Aligns content format with learner engagement signals.

Remedial Support

- Rule: If quiz score < 60% - recommend foundational articles or high-completion modules.
- Justification: Helps learners improve weak areas with structured content.

Exploratory Learners

- Rule: If learner starts many modules but completes few - recommend short, high-rated micro-modules.
- Justification: Reduces friction and increases module completion rates.

High Engagement Learners

- Rule: If time spent on modules is high - recommend deeper or advanced modules in similar topics.
- Justification: Keeps motivated learners challenged and engaged.

Collaborative Insights

- Rule: If peers with similar roles completed a module and rated it highly - recommend the same module.
- Justification: Leverages peer learning trends for effective recommendations.

3. Recommendation Approach

- Content-Based Filtering: Matches modules to learners based on preferences (format, topic, difficulty) and historical engagement.
- Collaborative Filtering (Optional/Hybrid): Suggests modules that learners with similar behavior or role-levels enjoyed.
- Hybrid Approach: Combines both methods for more robust personalization: format preferences + peer engagement.

Rationale:

- Ensures recommendations are personalized for individual learning styles.
- Leverages peer trends for improved engagement.
- Supports scalability for new learners and new modules without extensive historical data.