1. Problem Statement

Mentor evaluation today is broken. Institutions rely on **subjective, inconsistent, and time-consuming** review processes. As highlighted in the deck, three fundamental issues weaken existing systems:

Subjective & Biased Feedback

Evaluator opinions differ widely, and the same mentor may be rated very differently by different reviewers.

No Standardized Global Benchmark

What qualifies as "good teaching" varies across regions and institutions, making comparison and improvement difficult.

IntelliTeach solves this by creating an objective, AI-driven mentor evaluation system grounded in global teaching standards.

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2. Approach & AI Components

IntelliTeach evaluates teaching quality using a **multimodal AI pipeline** that analyzes video, audio, and transcript data. Our model uses four complementary lenses inspired by our pitch deck:

- **Global Benchmark Score**

Compares tone, pace, clarity, and speaking energy against a global dataset to produce an international 0–100 score.

- **"Explain Like I'm 15" Difficulty Checker**

Checks whether the mentor's explanation complexity matches the target learner's level.

Together, these produce a **complete, objective evaluation** that institutions can trust.

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3. Technical Architecture

Frontend

- **Streamlit (prototype)** or **React (final build)**
- Upload interface for videos
- Visualization of scores, engagement heatmaps, and improvement recommendations

Backend

- **Python** for core AI logic

- **Speech-to-text (Whisper / AssemblyAI)** for transcript generation

- **spaCy / Transformers** for language difficulty analysis

- Custom algorithms for pacing, clarity, and benchmarking

Recommended Repository Structure

/src

  /frontend

  /backend

  /ai_modules

/models

/docs

README.md

requirements.txt

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4. Challenges & Mitigations

Challenge 1: High Computational Load

Multimodal analysis can be slow.

Mitigation:
Use Whisper-tiny or chunked inference; allow audio-only uploads; pre-cache embeddings.

Challenge 2: Dataset Diversity for Benchmarking

Model may overfit to specific speaking styles.

Mitigation:
Use publicly available teaching datasets; normalize scores; implement region-independent calibration.

Challenge 3: Transcript Quality Variability

Background noise or unclear speech can reduce accuracy.

Mitigation:
Noise reduction preprocessing; fallback to confidence-weighted scoring.

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5. Roadmap to Final Build

Week 1 — Architecture & Setup (Completed)

- Finalized system workflow diagrams

- Created GitHub repo & folder structure

- Built basic UI prototype

- **Week 2 — AI Pipeline & Backend (In Progress)**

- Implement video/audio ingestion

- Add transcript generation

- **Week 3 — Frontend Integration & User Workflow**

- Display attention hotspots, benchmark scores, feedback

- Add minimal error handling & responsiveness

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6. Expected Functional Outcome (60–80% Completion)

By the end of this round, IntelliTeach will deliver a **fully working prototype** with:

✔ **End-to-end flow: Video Upload → AI Processing → Insights Display**

✔ **Core AI features operational: Benchmark Score, Difficulty Check, Knowledge Gap Flagging**

✔ **Clean UI: Simple and accessible frontend**

✔ **Documented architecture and developer workflow**

✔ **Scalable codebase ready for refinement in Round 3**

This meets — and exceeds — the hackathon's expected criteria for technical feasibility.

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7. Final Vision

IntelliTeach empowers institutions to:

- Evaluate mentors objectively

- Reduce review time by 90%

- Improve teaching quality through actionable insights

Our goal is to **standardize mentor evaluation globally** using AI.