Corporate Live Project (CLP) Programme

Project Description Form

PROJECT DETAILS:

- **Project Objective:**

  AI Agent for Resume Relevance Scoring and Secure Technical Screening in Data Science & Agentic AI Roles

  To design and prototype an AI-driven recruitment agent that automates early-stage hiring for Data Science and Agentic AI roles by:

1. Scoring candidate resumes for relevance and role fit, and
2. Conducting a secure, autonomous technical interview that dynamically adapts to candidate responses while enforcing compliance and preventing cheating.

   The project will ensure fairness, transparency, and data integrity through built-in AI compliance checks, proctoring features, and ethical AI governance.

- **Project Description:**

This project builds a secure, compliance-aware AI agent that mimics the role of a recruiter and interviewer for technical roles. The agent operates through two interconnected modules:

Module 1 – Resume Relevance Scoring

- Parse candidate resumes and job descriptions using natural language processing and semantic similarity models (e.g., BERT, OpenAI embeddings).
- Evaluate alignment on core data science and AI-agentic competencies — e.g., statistics, ML algorithms, Python, LLMs, and AI workflow automation.
- Output a Relevance Score (0–100) and generate a transparent explanation of skills matched, missing, or underrepresented.
- Include a Compliance Layer that ensures:
  - No bias or exclusion based on protected attributes (gender, age, religion, etc.).
  - Explainability for every decision (traceable skill-based reasoning).
  - Data privacy adherence (no exposure of PII)

Module 2 – Secure AI Technical Screening Interview

- Conducts a chat-based or voice-based autonomous technical interview without human intervention.

- Uses a question bank with tagged topics and difficulty levels across:
    - Data science, statistics, ML, and Python
    - Deep learning, transformers, LLMs
    - Agentic AI systems (prompt chaining, reasoning, multi-agent coordination)
- Dynamically adapts difficulty based on candidate answers.
- Evaluates candidate responses through LLM-based grading rubrics, code validation, or correctness scoring.
- Generates a structured Interview Report including:
    - Sub-scores per domain
    - Overall technical readiness score
    - Qualitative feedback summary
    - Compliance and integrity flags (if applicable)

Compliance & Anti-Cheating Mechanisms:

To ensure fair, transparent, and tamper-proof assessments, the system will include:

1. AI Compliance Engine:
    - Pre-checks generated questions for bias, sensitive content, or regulatory violations.
    - Ensures fairness by excluding demographic or personal identifiers from scoring logic.
    - Logs every decision for post-hoc auditability.
2. Candidate Authentication:
    - One-time token-based login or face snapshot verification (synthetic simulation in prototype).
3. Cheat Prevention Controls:
    - Real-time browser and keystroke activity monitoring (simulated).
    - Randomized question sequencing and timing constraints.
    - Detection of copy–paste or external assistance via anomaly detection on response patterns.
4. Interview Integrity Dashboard:
    - Displays compliance score, integrity flags, and audit logs to recruiters.
5. Privacy & Ethical Governance:
    - Use of synthetic or anonymized candidate profiles only.
    - Clear disclosure of AI-driven evaluation at interview start.
    - Option for candidate feedback or clarification on scoring.

- **Project Scope:**
    - **Target Roles:** Data Scientist, ML Engineer, Agentic AI Developer
    - **Data:** Only anonymized or synthetic resumes and job descriptions.
    - **Channels:** Web-based text/voice chat simulation for interviews.
    - **Ethics & Fairness:** Strict adherence to AI governance principles; protected attributes excluded.
    - **Output:** Relevance scores, interview transcripts, evaluation summaries, and compliance logs.
    - **Deliverable Level:** Functional prototype with compliance and integrity simulation; not deployed in live hiring.

- **Project Deliverables:**
  - Architecture Document — end-to-end system workflow (input validation → resume scoring → interview → compliance checks).
  - Resume Scoring Engine — NLP-based skill extraction and role-match scoring module.
  - Adaptive Interview Module — dynamic question logic, scoring rubric, and transcript summarization.
  - Compliance & Integrity Layer — anti-bias filters, cheat detection logic, and audit logging.
  - Technical Question Bank — curated dataset for Data Science and Agentic AI topics.
  - Prototype Interface — demo of full flow (resume upload → scoring → secure AI interview → report).
  - Evaluation & Compliance Report — metrics on accuracy, bias, explainability, and cheating prevention effectiveness.
  - Final Presentation — demonstration, ethical review, and roadmap for enterprise integration.