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📑 Project Proposal: Smart IELTS

1. Project Title

Smart IELTS – AI-Powered IELTS Test Preparation Platform

2. Introduction

The IELTS exam is one of the most widely taken English language proficiency tests worldwide. Similarly, exams like GRE play a crucial role in academic and career opportunities. While Large Language Models (LLMs) such as GPT can generate exam-style content, they lack access to **authentic previous years' questions** and often miss the **exact exam pattern**. This limits their usefulness for serious exam preparation.

To address this gap, we propose **Smart IELTS**, an AI-powered preparation platform that integrates **real past exam questions** (vectorized and categorized) with **LLM-generated content**. By combining genuine exam materials with the creativity of LLMs, Smart IELTS enables students to practice Listening, Reading, Writing, and Speaking through **interactive intelligent agents**, ensuring more **authentic, adaptive, and effective preparation.**

3. Problem Statement

- Current LLMs cannot accurately simulate IELTS/GRE tests because they lack access to **recent and historical question banks**.
- Students practicing with AI-only solutions receive **generic questions** that do not fully match the **difficulty or structure** of real exams.
- Existing platforms provide static question banks but **lack interactivity, real-time evaluation, and voice/image-based testing**.

- Speaking and Writing practice is especially limited, as candidates do not receive **authentic feedback based on actual exam criteria**.

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4. Objectives

- Build a **knowledge-enriched exam preparation system** by vectorizing 10–20 years of previous IELTS/GRE questions.
- Combine **past papers + LLM creativity** to provide students with both authentic and newly generated exam-style questions.
- Simulate **full exam environments** (Listening, Reading, Writing, Speaking) through agents like **Smythos** and **ElevenLabs**.
- Enable **voice-based speaking tests** with automatic evaluation (Fluency, Vocabulary, Grammar, Pronunciation).
- Support **writing evaluation from handwritten uploads**, processed via OCR and scored by LLMs according to official exam criteria.
- Deliver **real-time, personalized feedback and band score estimation** to help students track their progress.

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5. Methodology & Workflow

Step 1: Data Preparation

- Admin uploads **10–20 years of previous IELTS questions (PDFs)**.
- PDFs are **vectorized** and categorized into Listening, Reading, Writing, and Speaking.
- MCP server tool manages and retrieves the vectorized content.

Step 2: Question Management

- **MCP Server** retrieves previous-year questions for practice sessions.
- **LLM** generates **new, creative questions** that follow IELTS patterns (ensuring variety and novelty).

Step 3: Exam Simulation with Smythos Agent

- Students interact with the **Smythos agent** using simple prompts (e.g., "Start a Reading Test").
- The agent retrieves questions from the MCP server or generates new ones via the LLM.
- Students receive a **full test environment** (timed, structured, realistic).

Step 4: Speaking Test with ElevenLabs Voice Agent

- The speaking module uses **ElevenLabs voice agent** to simulate a live examiner.
- Student responses are recorded and sent to the **LLM** for evaluation.
- Evaluation follows IELTS criteria: **Fluency & Coherence, Lexical Resource, Grammar Range, Pronunciation**.

Step 5: Writing Evaluation via Image Upload

- Candidates upload a **photo of their handwritten writing task answer**.
- Image is processed using **OCR/vision models** to extract text.
- Extracted text is passed to the **LLM for evaluation** based on IELTS Writing criteria:
    - Task Achievement
    - Coherence and Cohesion
    - Lexical Resource
    - Grammatical Range and Accuracy
- Automated **band score + detailed feedback** is provided.

Step 6: Evaluation & Feedback

- Automated scoring system provides band-level feedback.
- Feedback highlights strengths and weaknesses.
- Progress tracking system helps students monitor improvement over time.

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6. Key Features

- **Vectorized Question Bank**: 20 years of IELTS questions managed by MCP server.
- **Smythos Agent Test Delivery**: Simple prompt-based test initiation.
- **LLM-Powered Question Generation**: New practice material beyond past papers.
- **Voice-based Speaking Simulation**: ElevenLabs voice agent conducts the speaking test.
- **Automated Band Score Evaluation**: LLM evaluates and scores in real time.
- **Multi-Module Support**: Listening, Reading, Writing, and Speaking covered.