Innov8 3.0

Organized by ARIES & Eightfold AI at Rendezvous IIT Delhi

The Whispering Shadows Mystery

Preliminary Problem Statement

The Quest: Your mission is to build a clever *AI Detective*. It will take an audio file, listen carefully, and turn voices to text. From there, it must untangle the mess—spot contradictions, highlight unclear or unreliable statements, and weave together the most likely truth. Finally, it must report its findings in a neat format, ready for judgment.

1 The Legend of the Whispering Shadows

Chapter 1: The Mystery Unfolds
In the shadowy corners of the digital realm, a secret society known as the "Whispering Shadows" has infiltrated the world's most prestigious tech companies. These master shape-shifters can assume any technical identity, weaving elaborate tales about their coding prowess and engineering feats.
But every shadow has a weakness. When cornered, these digital phantoms begin to unravel. Their voices tremble with fear, their stories shift, and their carefully crafted personas start to crack. Some whisper confessions in barely audible tones, others shout desperate lies, and many ramble about irrelevant memories from their childhood.
Their voices are cracked and clouded, the listening chambers echo with strange noises, and the very air seems to distort their words. Yet somewhere in this chaos lies the truth—if only someone clever enough can decode it.

Welcome, Digital Detective, to your greatest challenge yet! You must build the legendary **Truth Weaver**—an AI so powerful it can untangle the most twisted web of lies and extract pure truth from corrupted voices.

2 The Challenge of Voices

The Whispering Shadows don't just lie—they create entire alternate realities. When captured, they undergo five separate "truth sessions," each more desperate than the last.

The Voice Distortions:

- Trembling whispers that are barely audible
- Nervous rambling about their pet goldfish when asked about Python experience
- Emotional breakdowns mid-sentence, leaving crucial information hanging
- Background static from the mystical truth chambers that interferes with clarity

The Deception Patterns:

- Session 1: Confident lies told with practiced ease
- Session 2: Small cracks appear as pressure mounts
- Session 3: Desperate elaboration of false stories
- Session 4: Truth and lies become tangled as panic sets in
- Session 5: Final revelations mixed with last-ditch deceptions

Your Truth Weaver must be wise enough to see through these illusions, patient enough to parse garbled speech, and clever enough to spot the patterns that reveal authentic truth.

3 Your Mission Briefing

You'll receive voice recordings from captured Whispering Shadows. Each has provided multiple testimonies across different sessions, recorded in the chambers where audio quality shifts unpredictably and emotions run wild.

Technical Challenges:

- Crystal-clear confessions mixed with static-laden mumblings
- Voices that switch from confident shouts to fearful whispers mid-sentence
- Background interference
- Incomplete sentences

Your Truth Weaver Must:

- Decode each garbled testimony despite technical interference
- Detect contradictions across all sessions for each subject
- Weave together the most likely truth from conflicting accounts

4 Case Study: Shadow Agent "Phoenix"

Subject: Phoenix_2024
The Five Sessions (audio quality varies):

- *Session 1* (clear audio): "I've mastered Python for 6 years... built incredible systems..."
- *Session 2* (static interference): "Actually... crackle... maybe 3 years? Still learning advanced... bzzt"
- *Session 3* (shouting over noise): "LED A TEAM OF FIVE! EIGHT MONTHS! MACHINE LEARNING!"
- *Session 4* (whispered): "I... I work alone mostly... never been comfortable with... with people..."
- *Session 5* (emotional breakdown): "*sobbing* Just 2 months debugging... I'm not... I'm not what they think..."

Your Truth Weaver's Analysis:

```
{
  "shadow_id": "phoenix_2024",
  "revealed_truth": {
    "programming_experience": "3-4 years",
    "programming_language": "python",
    "skill_mastery": "intermediate",
    "leadership_claims": "fabricated",
    "team_experience": "individual contributor",
    "skills and other keywords": ["Machine Learning"]
  },
  "deception_patterns": [
    {
      "lie_type": "experience_inflation",
      "contradictory_claims": ["6 years", "3 years"]
    }
  ],
}
```

5 Submission Scroll

Present your Truth Weaver's findings in this mystical format:

```
{
  "shadow_id": "string",
  "revealed_truth": {
    "programming_experience": "string",
    "programming_language": "string",
    "skill_mastery": "string",
    "leadership_claims": "string",
    "team_experience": "string",
    "skills and other keywords": "List[String]",
```

```
    ...
  },
  "deception_patterns": [{
    "lie_type": "string",
    "contradictory_claims": "List[String]",
  }, ...
  ],
}
```

6 The Judgment

The submissions will be evaluated using two complementary metrics:

1. **Transcript Accuracy (Text File Evaluation)**
   - The converted transcript (`.txt`) will be evaluated against the ground truth transcript.
   - Evaluation will be based on **Character Similarity** (e.g., normalized Levenshtein similarity).
   - The score is calculated as:

$$\text{Transcript Score} = 1 - \frac{\text{Edit Distance}}{\text{Max Characters}}$$

     where `Edit Distance` is the minimum number of insertions, deletions, or substitutions required to match the ground truth.
2. **Truth Extraction Accuracy (JSON File Evaluation)**
   - The final JSON will be evaluated using a **Jaccard Similarity Score**.
   - For each field in the JSON:

$$\text{Score} = \frac{|\text{True Positives}|}{|\text{True Positives}| + |\text{False Positives}| + |\text{False Negatives}|}$$

   - An LLM will be used to handle synonyms, paraphrases, and semantic equivalence.

7 Derivables

Each team must submit the following items for their Truth Weaver:

1. **Transcript File (.txt)**
   - Contains the output of audio-to-text conversion.
   - This will be evaluated for character similarity against the ground truth transcript.
   - Each session must be clearly separated and labeled.
2. **Final JSON File (.json)**
   - A structured JSON file in the required format as specified in the `Submission Scroll`.
   - This will be evaluated using Jaccard similarity against the ground truth.
3. **Source Code Archive (.zip)**
   - A ZIP file containing all Python source files (`.py`) used in the solution.
   - If any model was trained or fine-tuned, only the training/fine-tuning script must be included, **not** the model weights.

- Must include a README with clear instructions for running the code.

Important Notes

- Submissions missing the transcript file or JSON file will not be evaluated.
- Large files (datasets, audio, or pretrained weights) must not be included.
- Ensure JSON validity and transcript readability — both directly affect scoring.

Bonus Challenge: The Agentic Flow

Context

A skilled interviewer doesn't just analyze code or transcribe speech—they decide when to listen, when to guide, and when to intervene. In the setting of a technical interview, this means making thoughtful choices: sometimes staying silent, sometimes nudging, sometimes asking the hard question at just the right moment.

Your Task

Imagine your AI interviewer as an agent making these decisions in real time. Design and submit an **Agentic Flow** that captures:

- The **states** your agent may find itself in during an interview.
- The **signals or events** it could notice from the candidate (voice, silence, hesitation, code output, etc.).
- The **actions** it might take in response.
- The **techniques or methods** you believe could enable such decision-making.

Expected Output

Your submission should present the flow itself, expressed in a clear form such as:

- A diagram (state transitions, decision points, actions), or
- Any structured representation that best communicates your idea.

Note

There is no single "right" design. The goal is to show how you envision an interview agent making intelligent, adaptive choices in real time. This adaptation shall be useful in the main problem statement of hackathon to make Agentic Technical Interviewer.

8 Joining the WhatsApp Group

Stay connected and collaborate effectively by joining our official WhatsApp group. Click the link below to join:

`https://chat.whatsapp.com/HXBXou2RZdNBlfoc9zgBIv`

9 Accessing the Datasets

To support your work, all relevant datasets have been compiled and made available in a shared drive. Access the datasets here:

`https://drive.google.com/drive/folders/1ADUGc0X1-WKu5HT8e0tRNcI-21h2Db9y?usp=drive_link`

May your algorithms pierce every shadow.