**Problem Statement**

Under the Jal Jeevan Mission, there is a need to monitor and assess the effectiveness of water management initiatives undertaken during gram sabha or panchayat meetings. To ensure transparency and accountability, there is a requirement to analyze video footage of these meetings. The primary requirement is to analyze the video content to determine the following:

- The number of individuals present during the meeting.

- Activities or discussions taking place during the meeting, particularly those related to water management and Jal Jeevan Mission initiatives.

- The language(s) spoken during the meeting, which can provide insights into community preferences, concerns, and engagement levels.

The analysis of these parameters will facilitate better understanding and assessment of the community's involvement, challenges, and progress in achieving the objectives of the Jal Jeevan Mission.

**Steps**

1. Data Collection: Obtain at least 10 video footages of meetings, prefermably gram sabha or panchayat meetings conducted under the Jal Jeevan Mission, to be used as input for analysis.

2. Find AI/ML models for video recognition: Research and explore AI/ML models suitable for video recognition tasks, focusing on identifying people, activities, and languages in video content.

3. Model Selection: Evaluate and select the most appropriate AI models for video recognition tasks based on factors such as accuracy, speed, and compatibility with the dataset and project requirements.

4. Preprocessing: Clean and prepare the video data for analysis by performing tasks such as noise reduction, video stabilization, and format standardization to ensure consistent quality.

5. Extract audio and summarize video content: Utilize audio processing techniques to extract speech from the video and attempt to generate summaries or transcripts of the video content using natural language processing (NLP) algorithms.

6. Language Detection: Implement language detection algorithms to identify the languages spoken during the meetings and determine the predominant language(s) used in the discussions.

7. Person Detection: Utilize computer vision algorithms to detect and count the number of individuals present in each video frame, distinguishing between men and women if possible.

8. Activity Recognition: Employ machine learning models to recognize and classify activities or discussions occurring during the meetings, particularly focusing on water management-related discussions and Jal Jeevan Mission initiatives.

9. Integration: Integrate the developed algorithms and models into a cohesive system capable of analyzing video content to extract desired parameters, including the number of attendees, activities, spoken languages, and summarized content.

10. Documentation and Presentation: Prepare detailed documentation outlining the steps taken in model selection, implementation, and integration. Create a presentation summarizing the findings, including the selected AI models, their performance metrics, and the extracted parameters from the video analysis.

**Task**

- Obtain at least 10 video footages of meetings, preferably gram sabha or panchayat meetings conducted under the Jal Jeevan Mission, for analysis.

- Research AI/ML models suitable for video recognition tasks, focusing on identifying people, activities, and languages in video content.

-Evaluate and select appropriate AI models for video recognition based on accuracy, speed, and compatibility with the dataset.

- Clean and prepare video data by reducing noise, stabilizing videos, and standardizing formats.

- Utilize audio processing techniques to extract speech from videos and generate summaries using NLP algorithms.

- Implement language detection algorithms to identify spoken languages during meetings.

- Utilize computer vision algorithms to detect and count individuals in each video frame.

- Employ machine learning models to recognize activities or discussions during meetings, particularly focusing on water management-related topics.

- Integrate developed algorithms and models into a cohesive system for analyzing video content.

- Prepare documentation outlining steps taken in model selection, implementation, and integration. Create a presentation summarizing findings, including selected AI models and performance metrics

.**Conclusion**

By successfully implementing the proposed system, we aim to enhance the monitoring and assessment capabilities of the Jal Jeevan Mission. The automated analysis of video footage will provide valuable insights into the community's engagement, challenges, and progress in water management initiatives. This information will enable policymakers and stakeholders to make informed decisions, allocate resources effectively, and drive positive change in achieving the objectives of the Jal Jeevan Mission.

**Weekly Task**

Week 1: Data Collection

- Task: Identify sources for obtaining video footages of meetings conducted under the Jal Jeevan Mission.

- Subtask: Reach out to relevant authorities or organizations to request access to meeting video recordings.

- Subtask: Research online platforms or archives where such video footages might be available.

Week 2: Model Research and Exploration

- Task: Conduct extensive research on AI/ML models suitable for video recognition tasks.

- Subtask: Explore academic papers, articles, and online resources to identify state-of-the-art models in video recognition.

- Subtask: Compile a list of potential models with capabilities in identifying people, activities, and languages in video content.

Week 3: Model Selection

- Task: Evaluate and compare the identified AI models based on factors such as accuracy, speed, and compatibility.

- Subtask: Perform benchmarking tests to assess the performance of each model on sample video data.

- Subtask: Consult with team members or experts to make informed decisions regarding model selection.

Week 4: Preprocessing

- Task: Develop preprocessing pipelines for cleaning and preparing the video data for analysis.

- Subtask: Implement noise reduction techniques to enhance the quality of video recordings.

- Subtask: Apply video stabilization algorithms to correct shaky footage and improve visual clarity.

Week 5: Audio Extraction and Summarization

- Task: Explore audio processing techniques for extracting speech from the video recordings.

- Subtask: Experiment with NLP algorithms to generate summaries or transcripts of the video content based on extracted audio.

- Subtask: Fine-tune summarization models to capture key discussions and topics during the meetings.

Week 6: Language Detection

- Task: Implement language detection algorithms to identify the languages spoken during the meetings.

- Subtask: Train language detection models on annotated datasets to recognize multiple languages accurately.

- Subtask: Validate language detection algorithms using sample video data and ground truth annotations.

Week 7: Person Detection

- Task: Develop computer vision algorithms for detecting and counting individuals in each video frame.

- Subtask: Investigate techniques for distinguishing between men and women in the video footage.

- Subtask: Optimize person detection models to handle varying lighting conditions and camera angles.

Week 8: Activity Recognition

- Task: Employ machine learning models for recognizing and classifying activities or discussions during the meetings.

- Subtask: Train activity recognition models to identify water management-related discussions and Jal Jeevan Mission initiatives.

- Subtask: Evaluate the performance of activity recognition algorithms using labeled datasets and performance metrics.

Week 9: Integration

- Task: Integrate the developed algorithms and models into a cohesive system for analyzing video content.

- Subtask: Design software pipelines to facilitate seamless integration of different modules.

- Subtask: Conduct integration tests to ensure interoperability and functionality across all components.

Week 10: Documentation and Presentation

- Task: Prepare detailed documentation outlining the steps taken in model selection, implementation, and integration.

- Subtask: Create a presentation summarizing the findings, including selected AI models, performance metrics, and extracted parameters from the video analysis.

- Subtask: Review documentation and presentation materials for clarity, accuracy, and completeness.