

Smartan.AI - Computer Vision & AI Internship Task Document

Task Duration: 2 Days

Submission Deadline: 20th of June (Midnight)

Overview

This document outlines details about the task designed to evaluate your skills in computer vision, video analysis, and AI system design. This task tests your depth in modeling, implementation, and problem-solving under a short timeline.

You are required to complete the task within the 3-day duration.

Task 1: Video-Based Action Classification (Exercise Recognition)

Objective:

Develop a video classification model to recognize different types of gym exercises from short video clips.

Problem Details:

- Build a 3-class video action classifier for the following exercises:
 - Bicep Curl
 - Lateral Raise
 - Squat
- Use open-source datasets (e.g., UCF101, Kinetics-400, HMDB51, FITX) or record your own short clips (3–5 seconds, at least 15 clips per class).
- Each clip should contain a minimum of 16 frames (approx. 1.5 to 3 seconds).

Requirements:

- Use any pre-trained architecture (e.g., I3D, SlowFast, X3D, VideoMAE) and fine-tune it.
- Apply relevant data preprocessing and augmentation.
- Optimize for accuracy, clarity, and runtime.

Submission Must Include:

- Python code in a public GitHub repository with clear README.
- Training, evaluation, and inference scripts.
- Explanation report (word or PDF) covering approach, rationale, and results.
- Sample inference video with predicted class.
- Accuracy metrics on validation/test split.
- (Optional) Deploy a minimal demo app using Flask or Streamlit.

Submissions Will Be Rejected If:

- GitHub repo is private or incomplete.
- Key deliverables (code, video, documentation) are missing.
- Plagiarism is found.
- Submission is late without prior approval.

Bonus Points (Optional):

- Real-time demo using webcam
- Combination of spatial and temporal posture rules
- Streamlit or Flask app for demo

Good luck!

For queries, feel free to reach out before your deadline.

-- Team Smartan.AI