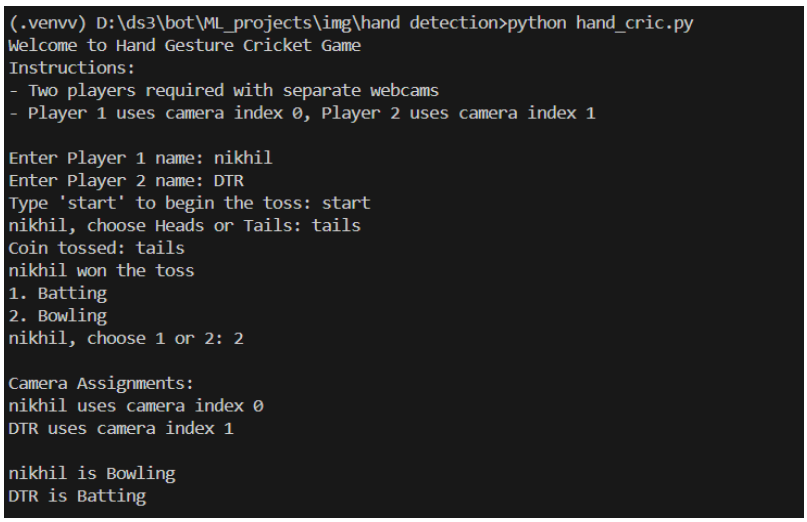
Project Flow: Hand Gesture Cricket Game

This document outlines the workflow of the Hand Gesture Cricket Game, a two-player game utilizing hand gesture recognition via webcams.

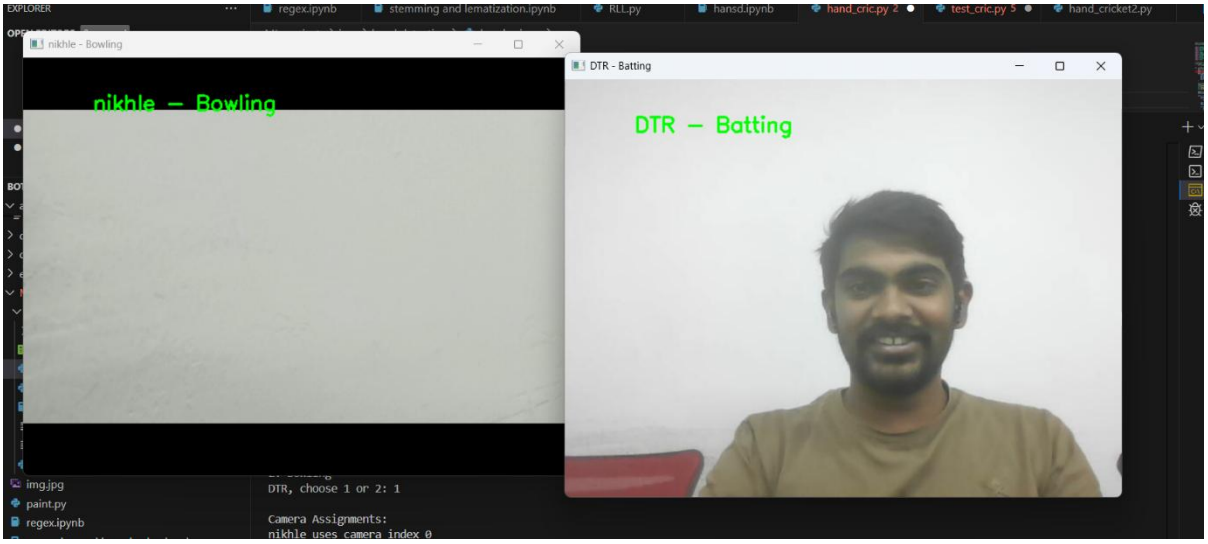
1. Game Initialization and Setup The game begins by welcoming players and providing essential instructions for setting up the game environment.

- **Welcome Message & Initial Instructions:** The console output displays "Welcome to Hand Gesture Cricket Game" and provides instructions: "Two players required with separate webcams," with Player 1 using camera index 0 and Player 2 using camera index 1.
- **Player Name Entry:** Players are prompted to enter their names. For instance, in the example, "nikhil" is entered for Player 1 and "DTR" for Player 2.
- **Toss Phase:**
    - To start the game, players are instructed to type 'start' to begin the toss.
    - One player chooses "Heads or Tails" (e.g., "nikhil, choose Heads or Tails: tails").
    - The coin is tossed, and the result is displayed (e.g., "Coin tossed: tails").
    - The winner of the toss is announced (e.g., "nikhil won the toss").
- **Role Selection:** The toss winner then chooses whether to "1. Batting" or "2. Bowling" (e.g., "nikhil, choose 1 or 2: 2").
- **Camera Assignments:** The system confirms which camera index is assigned to each player's role, ensuring proper webcam integration for gesture detection (e.g., "nikhil uses camera index 0" and "DTR uses camera index 1").
    - Finally, the roles for the current innings are stated (e.g., "nikhil is Bowling" and "DTR is Batting").



2. Gameplay (Per Ball/Over) The game progresses through balls within an over, where players use hand gestures to simulate cricket actions.

- **Live Camera Feeds:** During gameplay, two separate windows display the live camera feeds for each player, indicating their current role (e.g., "nikhle - Bowling" and "DTR - Batting").



- **Ball Progression:** The console tracks the game's progress, showing the current "Over" and "Ball" number (e.g., "Over 1, Ball 1").
- **Hand Gesture Recognition:**
    - Both the batter and bowler show a hand gesture simultaneously.
    - The system detects and displays the recognized gesture for each player (e.g., "nikhil shows: 6", "DTR shows: 1").
    - **Gesture Meanings:** Each specific hand gesture corresponds to a certain number of runs:
        - One finger: 1 Run

- Two fingers: 2 Runs

- Three fingers: 3 Runs

- Four fingers: 4 Runs

- Thumb (thumbs up): 6 Runs

- **Timeout/No Gesture Detection:** If one or both players fail to show a valid gesture within a specified timeframe, a "TIMEOUT" message is displayed, and the gesture value might be recorded as -1 (e.g., "[TIMEOUT] No valid hand gesture detected for nikhil - Bowling. nikhil shows: -1. One or both players failed to show a valid gesture.").
- **Scoring and Outs:**
    - The batter shows a gesture representing runs, while the bowler shows a gesture attempting to match the batter's move.
    - If the batter's gesture and the bowler's gesture are the same, the batter is declared "OUT!" (e.g., "nikhil shows: 6", "DTR shows: 6", "nikhil is OUT!").
    - If the gestures are different, the runs shown by the batter are added to their score.
    - The batter's innings continues, with their score accumulating, until they are out.

```
Over 1
Ball 1
INFO: Created TensorFlow Lite XNNPACK delegate for CPU.
INFO: Created TensorFlow Lite XNNPACK delegate for CPU.
[TIMEOUT] No valid hand gesture detected for nikhil - Bowling.
nikhil shows: -1
DTR shows: 1
One or both players failed to show a valid gesture.
Ball 2
INFO: Created TensorFlow Lite XNNPACK delegate for CPU.
INFO: Created TensorFlow Lite XNNPACK delegate for CPU.
nikhil shows: 6
DTR shows: 1
Ball 3
INFO: Created TensorFlow Lite XNNPACK delegate for CPU.
INFO: Created TensorFlow Lite XNNPACK delegate for CPU.
nikhil shows: -1
DTR shows: 2
One or both players failed to show a valid gesture.
Ball 4
INFO: Created TensorFlow Lite XNNPACK delegate for CPU.
INFO: Created TensorFlow Lite XNNPACK delegate for CPU.
nikhil shows: 6
DTR shows: 6
DTR is OUT!
```

3. Game Conclusion The game concludes after both players have had their turn batting.

- **Final Scores:** The game displays the final scores for both players (e.g., "Final Scores: nikhil: 0, DTR: 1").
- **Winner Declaration:** The player with the higher score is declared the winner (e.g., "DTR wins by 1 runs.").

```
Over 2
Ball 1
INFO: Created TensorFlow Lite XNNPACK delegate for CPU.
INFO: Created TensorFlow Lite XNNPACK delegate for CPU.
nikhil shows: 6
DTR shows: 6
nikhil is OUT!

Final Scores:
nikhil: 0
DTR: 1
DTR wins by 1 runs.
```

4. Technical Details & Disclaimer The project incorporates specific technical components and comes with a disclaimer regarding its purpose and limitations.

- **Technology Used:** The game utilizes TensorFlow Lite XNNPACK delegate for CPU, indicating its use of machine learning for gesture recognition.
- **Disclaimer:** The game is developed as a personal project solely for educational and entertainment purposes. It is not intended for professional or commercial use. Furthermore, it acknowledges that gesture recognition accuracy may be affected by lighting conditions and camera quality.