

# **DLWEEK: HEALTHCARE**

**A Beginner's Guide to Gym Workout**  
by Team ALT



## **PROBLEM STATEMENT**

### **HOLDBACKS FOR GYMS**

**Gym intimidation and fear of injury deter many, especially beginners, from exercising.**  
**Anxiety about judgement & lack of guidance create barriers to fitness, impacting both physical and mental well-being.**

# 5 BIGGEST REASONS WHY PEOPLE DON'T HIT THE GYM

- Two in five people stated they felt self-conscious, be it about their appearance or being judged by others
- One in four saying they were worried that people would judge their fitness levels.
- It also revealed that 21.7% of people stated they had a lack of motivation, followed closely by a lack of time (20.2%), and 15.1% of people were unsure how to use the machines.

UNSURE ON HOW TO  
USE THE EQUIPMENTS

LACK OF TIME

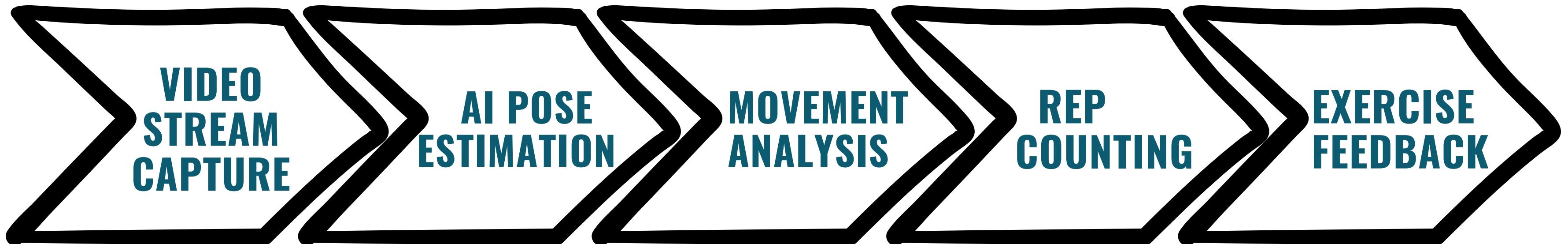
LACK OF MOTIVATION

WORRIED THAT PEOPLE WILL  
JUDGE MY FITNESS LEVEL

FEELING CONCIOUS ABOUT  
HOW THEY LOOK



# ALGORITHM FLOW



# FORMFIT

 **FormFit**

Main Menu

 Example Poses

 Select Exercise

 **Exercise Tracker AI**

Select an exercise to track:

Choose an exercise:

Bicep Curls Detection ✖️ ▾

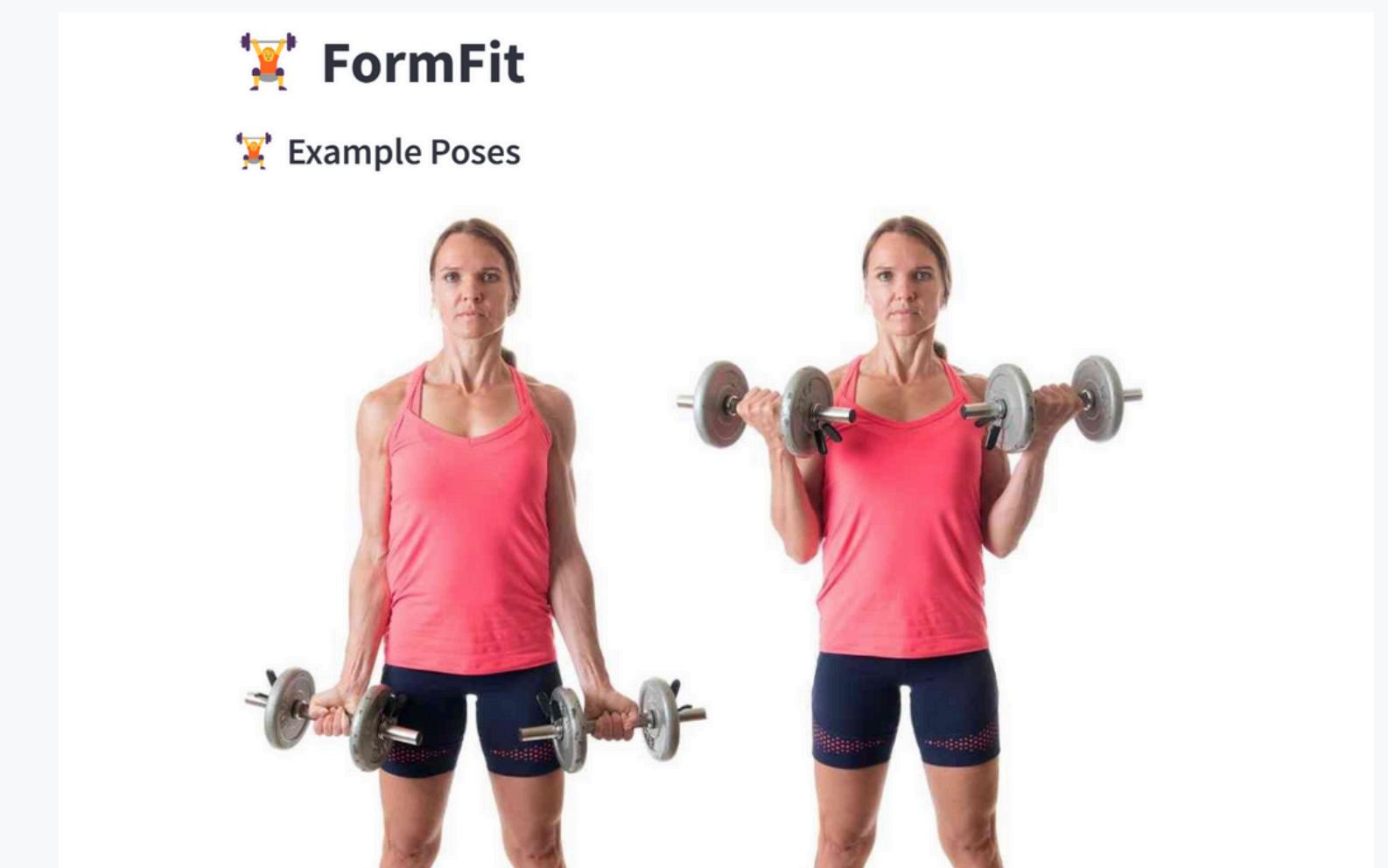
Bicep Curls Detection

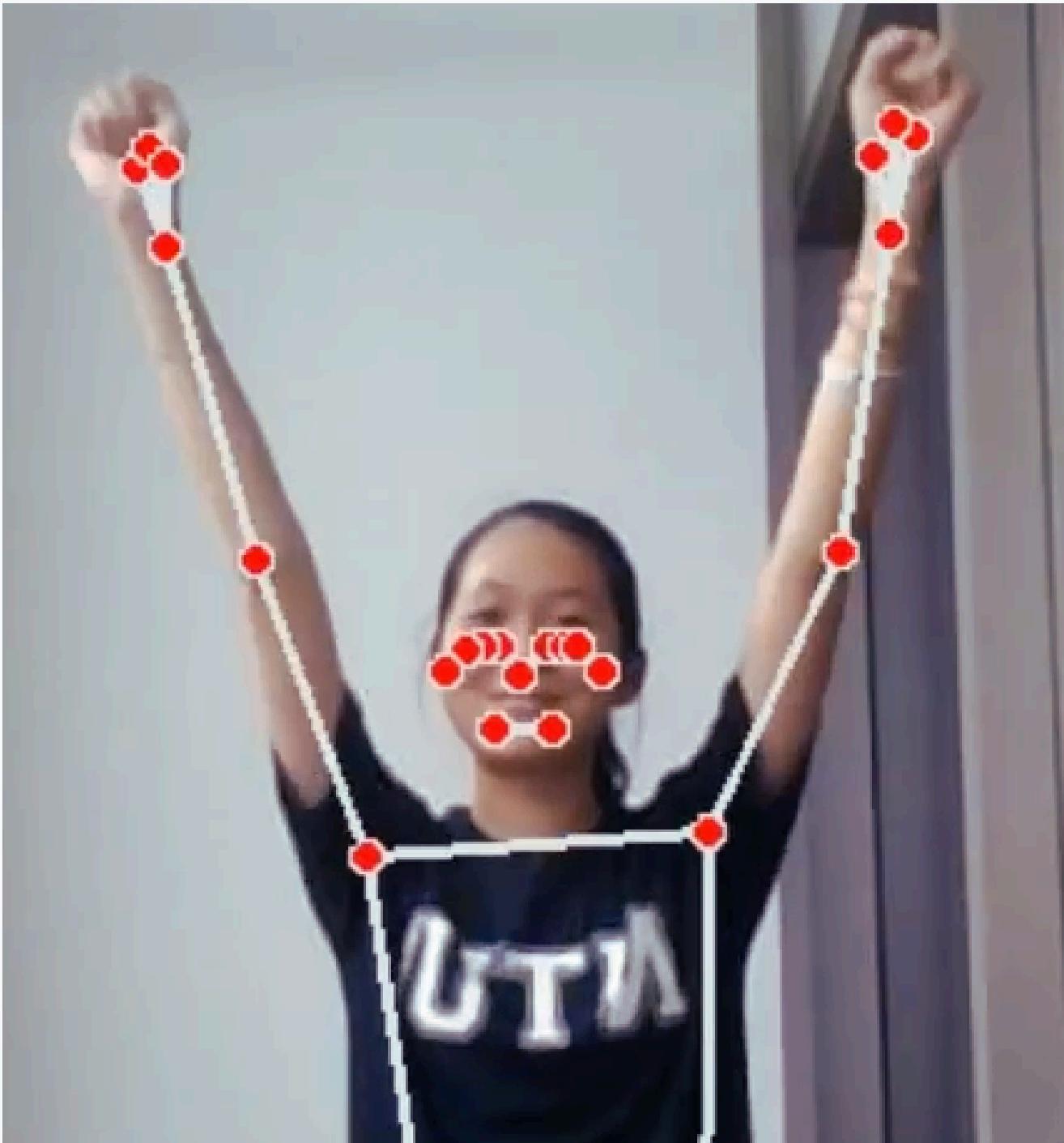
Shoulder Press Detection

Squats Detection

Wall Sit Detection

Deadlift Detection

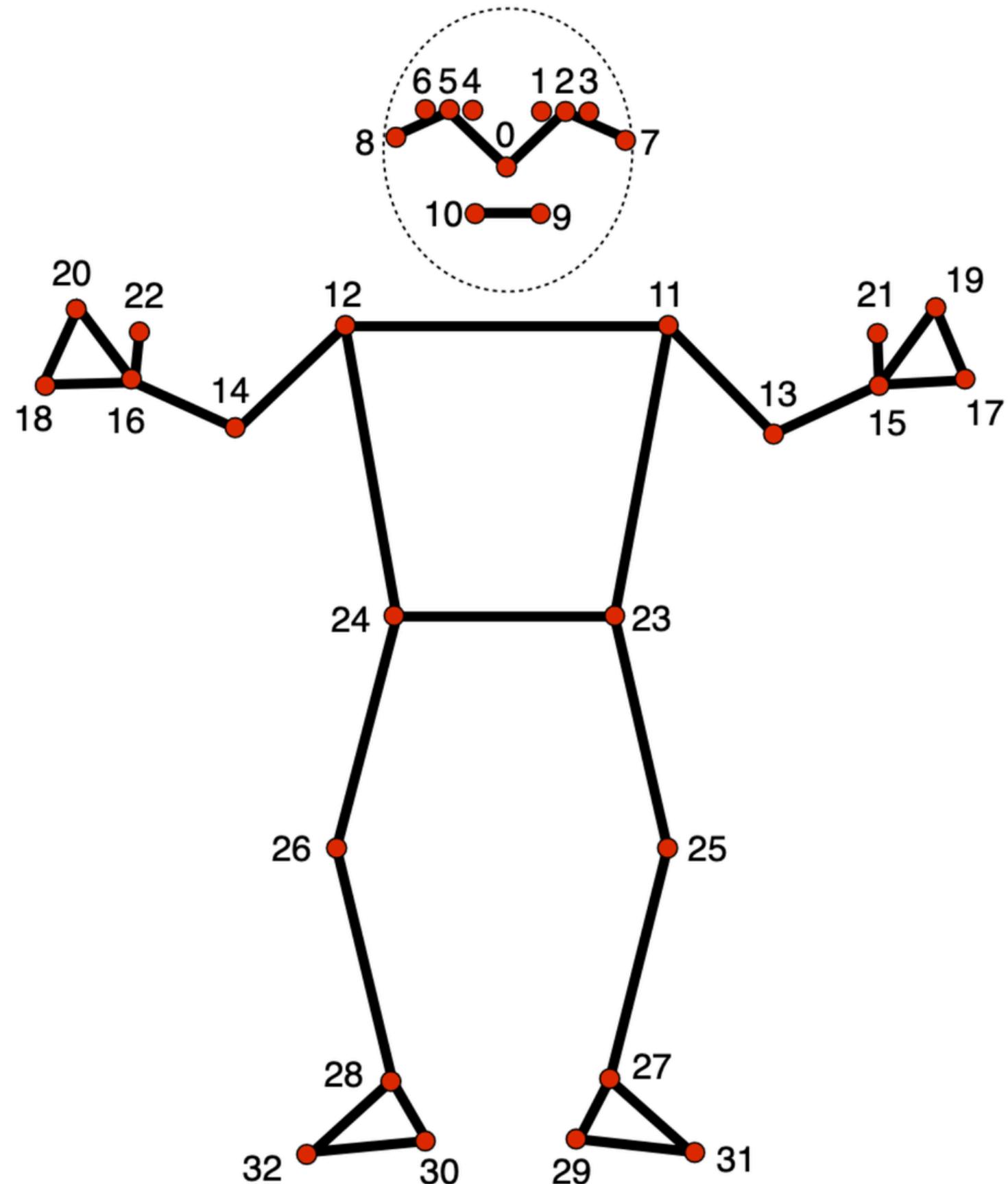




## VIDEO STREAM CAPTURE

- Utilises webcam feature to **capture user movements in real time.**
- The frame from the webcam is **continuously captured and processed to track body positions.**

# AI POSE ESTIMATION USING MEDIAPIPE



- Uses **artificial intelligence & machine learning** to detect **key body landmarks** such as shoulders, elbows, knees, and ankles.
- These landmarks are used to understand the user's posture and the movements they are performing during the exercise.
- Landmark Detection: Mediapipe identifies up to 33 landmarks on the body, and their positions (x, y coordinates) are captured for analysis.

# MOVEMENT ANALYSIS

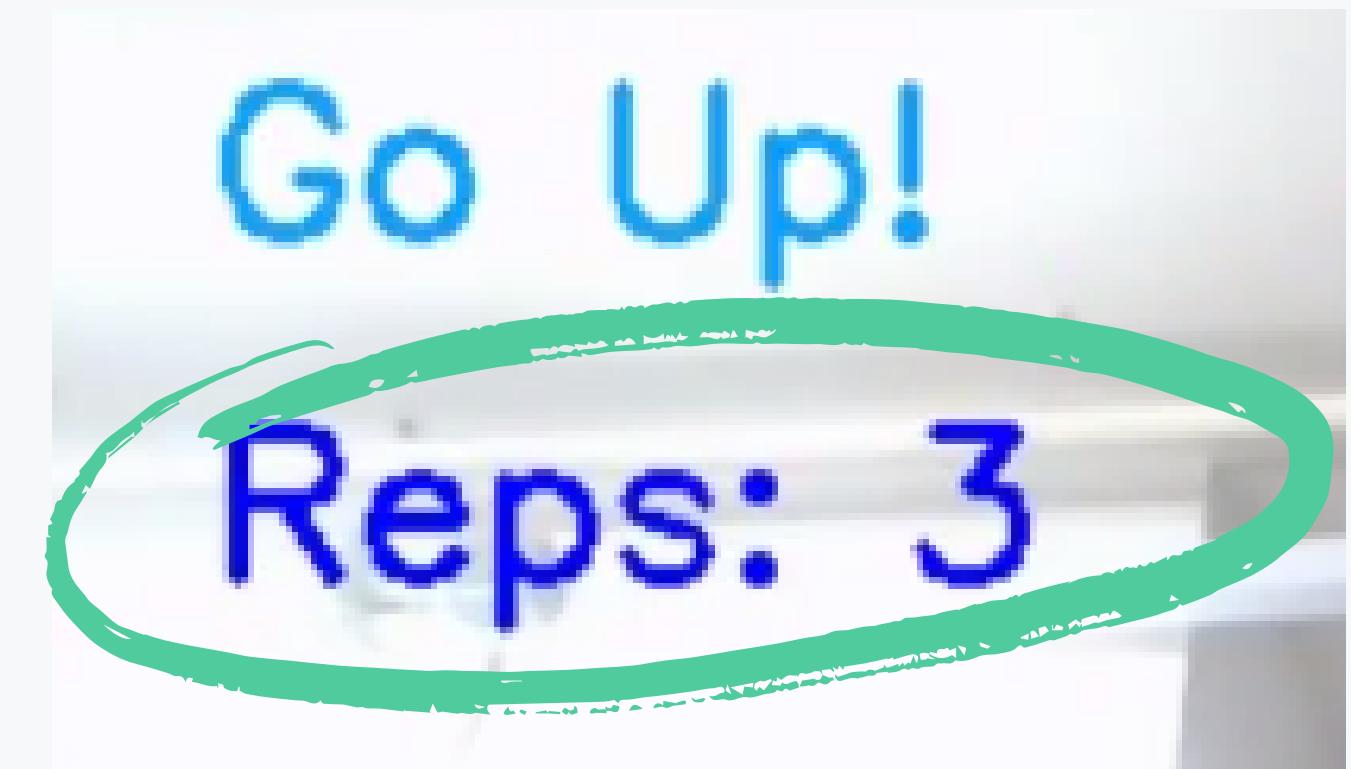


- Based on the positions of the landmarks, we calculate angles between specific body joints
- Mathematical Calculations: use angle calculation algorithm to detect whether the joints are in the correct position for a particular exercise movement
- Example: For wall sit, we calculate angles between knee, ankle and hip to determine if the user is in a proper position (e.g. is the knee angle below a certain threshold?)

# REP COUNTING

## Counting Logic

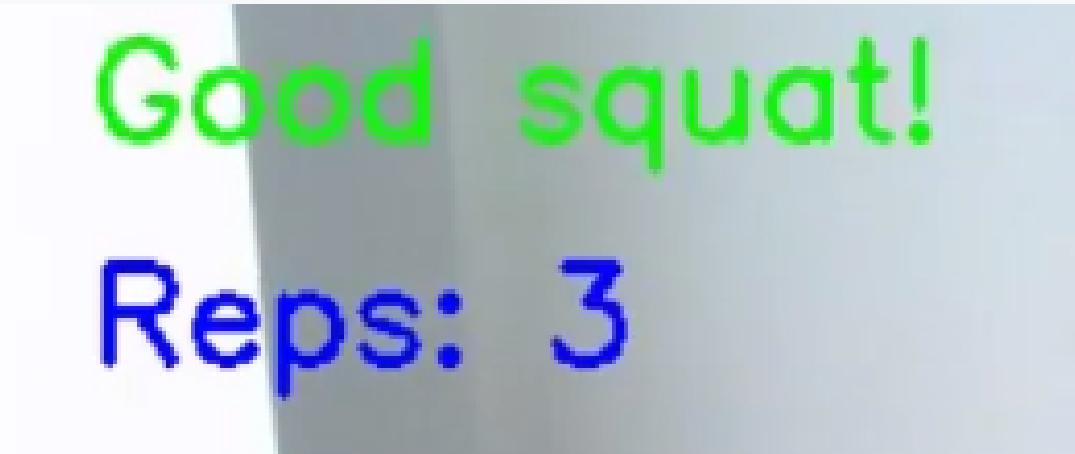
- For exercises like bicep curls, the algorithm tracks the angle between the elbow and wrist.
- If the elbow **angle is above a certain threshold** (e.g., arm fully extended), the **count is incremented**
- **State Tracking:** The app keeps track of whether the person is at the start or end of the motion to avoid false counts.



Track the **number of repetitions** the user completes based on their movement.

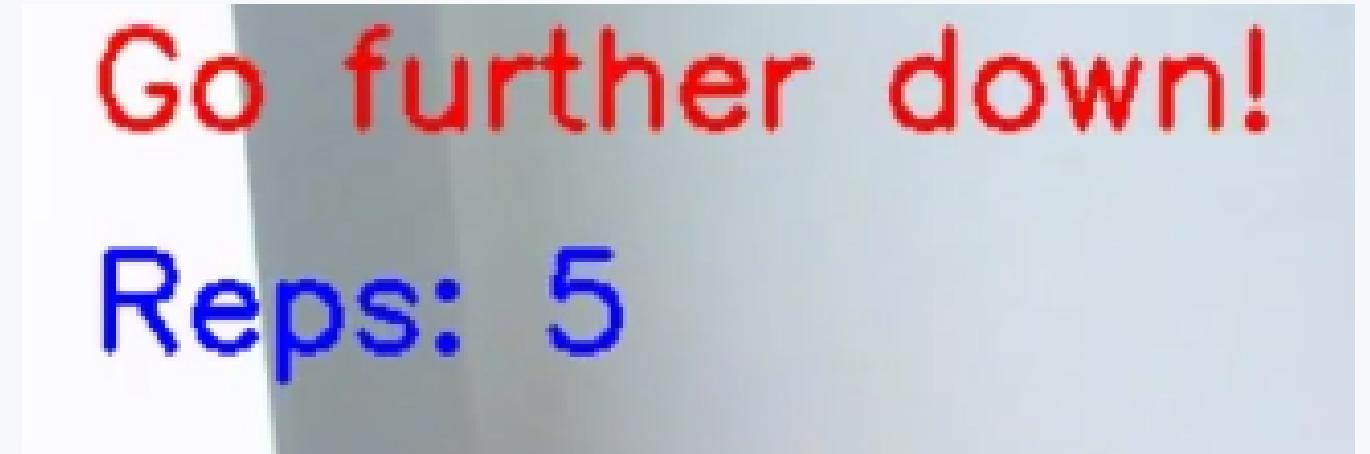
# EXERCISE FEEDBACK

- Real-time feedback is provided based on the position of the user's joints.
- Form Correction: Feedback is displayed to the user if the app detects incorrect movement.
  - Example: "Go further down" or "Good squat!" based on knee angles.
- Encouragement: Positive reinforcement such as "Great form!" or "Keep going!" is also provided to motivate the user.



Good squat!

Reps: 3

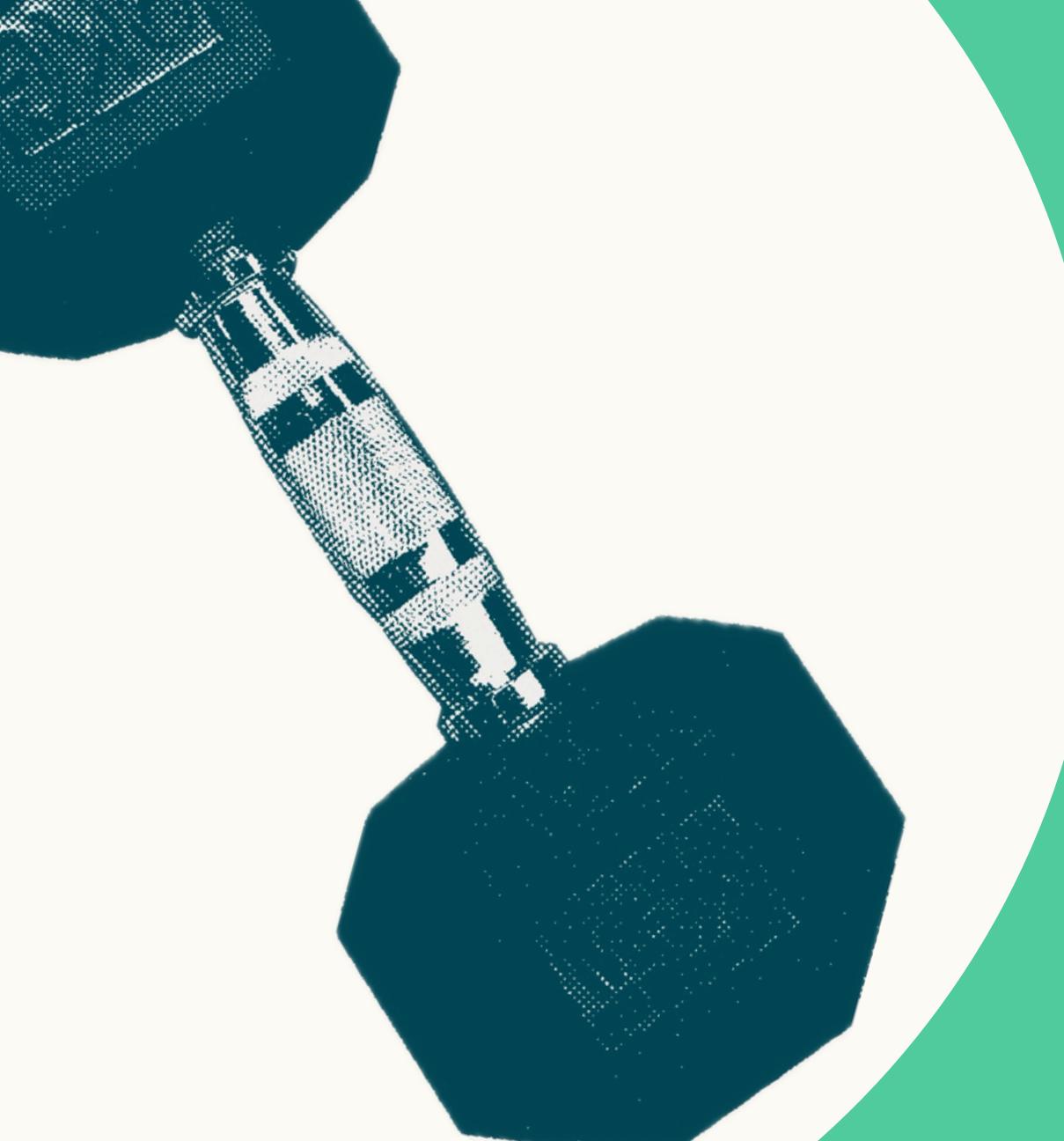


Go further down!

Reps: 5

# TECH STACK





# REFERENCES

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# THANK YOU!