

DigiTrack - Industrial Time Recorder Documentation

Overview

DigiTrack - Industrial Time Recorder is an application designed to automatically track work hours in an industrial environment using hand detection. The system starts a session when a worker's hand is detected and pauses or stops when no hands are detected for a specified period.

How to Use the Application

1. Start the Backend

1. Open DigiTrack 3.0 folder, click on DigiTrack.exe file *.exe might not be visible.

2. Open the Frontend

1. Go to browser of your choice and access the application frontend in a browser at the same address (<http://127.0.0.1:5000/>).
2. You should see the application interface with fields for entering a production order, session status, and a video feed placeholder.

Functionalities

Start Tracking

1. Enter a production order ID in the input field.
2. Click the Start Tracking button.
3. Observe:
 - The video feed starts displaying the camera feed.
 - Session status changes to Session Status: Running.
 - The total time counter starts from 00:00:00.

Idle Behavior

1. When the application detects no hands for 10–30 seconds:
 - The session status changes to Session Status: Idle.
 - The total time counter stops incrementing.
2. If hands are detected again:
 - The session resumes.
 - The session status changes back to Session Status: Running.

Stop Tracking

1. Click the Stop & Save button.
2. Observe:
 - The session status changes to Session Status: Stopped.
 - A CSV file (detection_data.csv) is generated in the root folder containing:

- Production Order ID
- Total Time (formatted as HH:MM:SS)
- Start and Stop timestamps.

Expected Behaviors

- Camera Initialization: The camera should open quickly without significant delays.
- Session Status Updates:
 - Running: When hands are detected.
 - Idle: When no hands are detected for 10–30 seconds.
 - Stopped: When manually stopped or idle for more than 30 seconds.
- Real-Time Updates: The total time and session status should update dynamically.

What to Observe

1. User Interface

- Is the layout intuitive and user-friendly?
- Do buttons and fields behave as expected (e.g., enabling/disabling correctly)?

2. Camera Behavior

- Does the video feed start promptly when tracking begins?
- Does the video feed stop correctly when tracking ends?

3. Session Status

- Are the session status changes accurate (Running, Idle, Stopped)?
- Does the application pause and resume correctly when hands are detected or not detected?

4. CSV Data

- Is the CSV file generated after stopping the session?
- Does it correctly record the production order, total time, start time, and stop time?

5. Performance

- Is the camera feed smooth and responsive?
- Does the system handle multiple start/stop cycles without errors?

Potential Test Cases

Functional Tests

- Start a session with a valid production order.
- Verify the total time counter increments while hands are detected.
- Simulate an idle scenario (no hands for 10–30 seconds) and ensure the session pauses.
- Simulate a hand re-entry scenario and confirm the session resumes.

Error Handling Tests

- Start tracking without entering a production order (should show an alert).
- Try starting tracking when the camera is already in use (should handle gracefully).

Edge Cases

- Leave the session idle for more than 30 seconds and ensure it stops automatically.
- Simulate rapid hand movements and verify accurate detection.