



Net Height Measurement software

ADRDE, DRDO

Failure cases and Solution

1. Night-time object detection failure

Failure Condition: Objects are hard to detect due to insufficient light, resulting in noisy and unclear frames.

Solution :

- **Filters Used:** gaussian filter, laplacian of gaussian.
- **Explanation:** Gaussian filtering reduces noise in low-light frames, and Laplacian of Gaussian emphasizes edges, enhancing object visibility in dark conditions.

2. Poor stream quality (low resolution)

Failure Condition: The camera feed appears grainy or pixelated, making it difficult to discern objects or track details.

Solution :

- **Function Used:** merge hdr.
- **Explanation:** HDR merging combines images with varying exposure levels to produce a single, high-resolution output, ensuring clear and detailed streams.

Night-time object detection

Activities Google Chrome

Chat | Ganesh Kandikond x | Mail - Rakesh M - Outlook x | Live Feeds

Screenshot captured
You can paste the image from the clipboard.

Jan 8 18:34

127.0.0.1:4400/livefeeds

NET HEIGHT MEASUREMENT SOFTWARE

Menu



This screenshot shows a night-time video feed displayed within a web browser window. The feed is titled 'NET HEIGHT MEASUREMENT SOFTWARE'. The scene is very dark, with some light coming from windows of a building in the background and a few vehicles and people visible in the foreground. A small green box highlights a person in the lower right foreground. A tooltip at the top right of the browser window says 'Screenshot captured' and 'You can paste the image from the clipboard.' The browser's address bar shows the URL '127.0.0.1:4400/livefeeds'. The top status bar indicates the date and time as 'Jan 8 18:34'. The left side of the screen features a vertical dock with various application icons, including a terminal, file manager, and system settings. The overall interface has a modern, minimalist design.

3. Over exposed frames in sunlight

Failure Condition: Bright sunlight leads to washed-out frames, where objects become indistinguishable due to excessive brightness.

Solution :

- **Filter Used:** gamma correction.
- **Explanation:** Dynamically adjusts the brightness to correct overexposure, ensuring objects are visible in high-light environments.

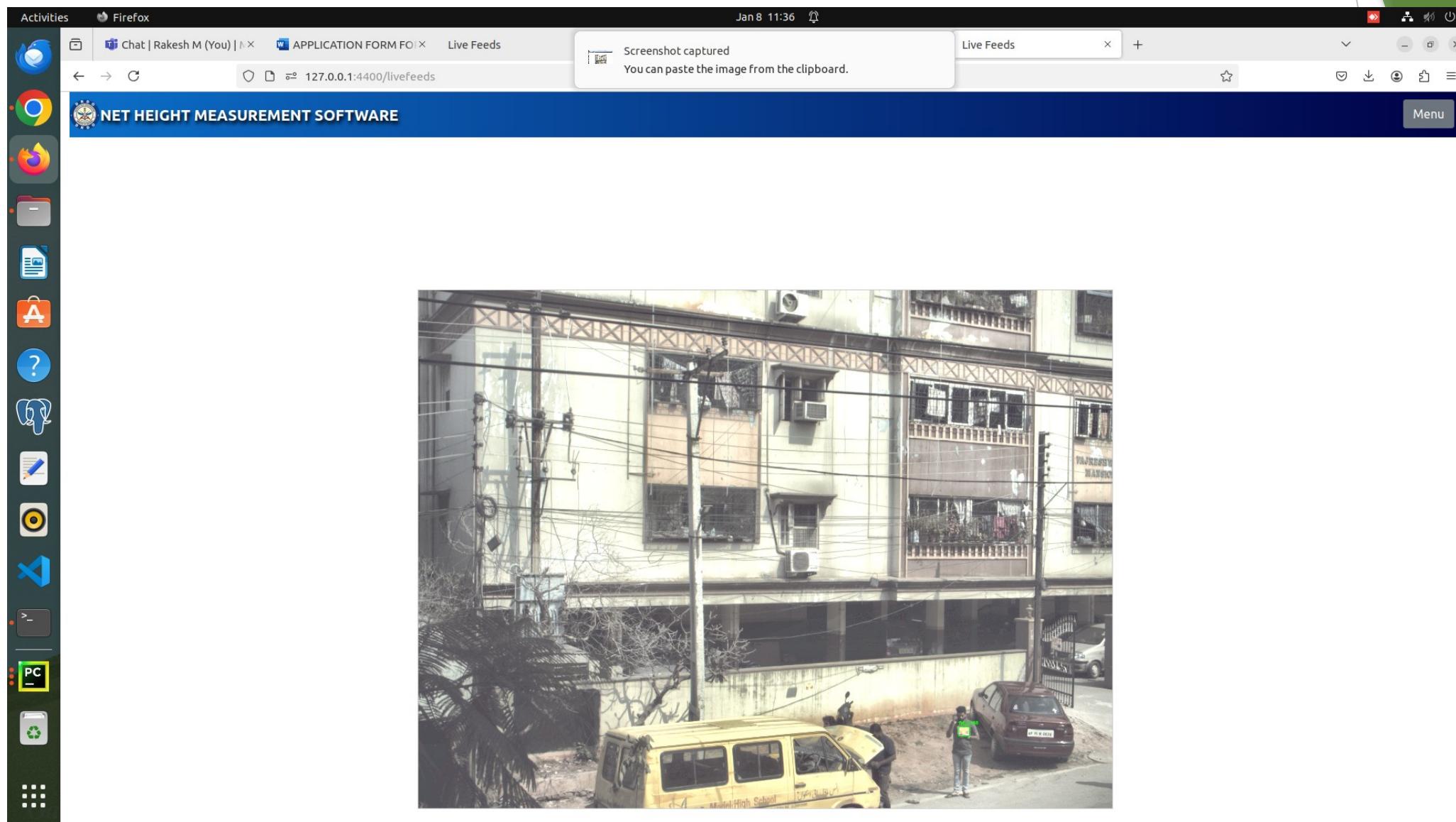
4. Improper exposure during day or night

Failure Condition: Frames are either too dark or too bright due to static exposure settings, reducing object detectability.

Solution :

- **Function Used:** exposure and gain.
- **Explanation:** Dynamically calibrates exposure and gain based on ambient light levels to maintain clarity across various lighting conditions.

object detection in Sunlight



5. Motion blur in moving objects

Failure Condition: Fast-moving objects appear blurred, making detection unreliable.

Solution :

Function Used: motion deblur.

Explanation: Reduces motion blur by applying a deblurring algorithm that enhances the sharpness of moving objects.

6. Low visibility in foggy or rainy weather

Failure Condition: Weather conditions like fog or rain obscure the camera view, making object detection ineffective.

Solution :

Filter Used: defog.

Explanation: Enhances visibility by reducing haze or fog effects, improving contrast and clarity in challenging weather.

7. Rapid changes in lighting (e.g., entering tunnels)

Failure Condition: Sudden changes in light intensity result in either very dark or very bright frames.

Solution :

- **Function Used:** adaptive histogram equalization.
- **Explanation:** Equalizes the frame's brightness dynamically, ensuring consistent visibility despite rapid lighting changes.

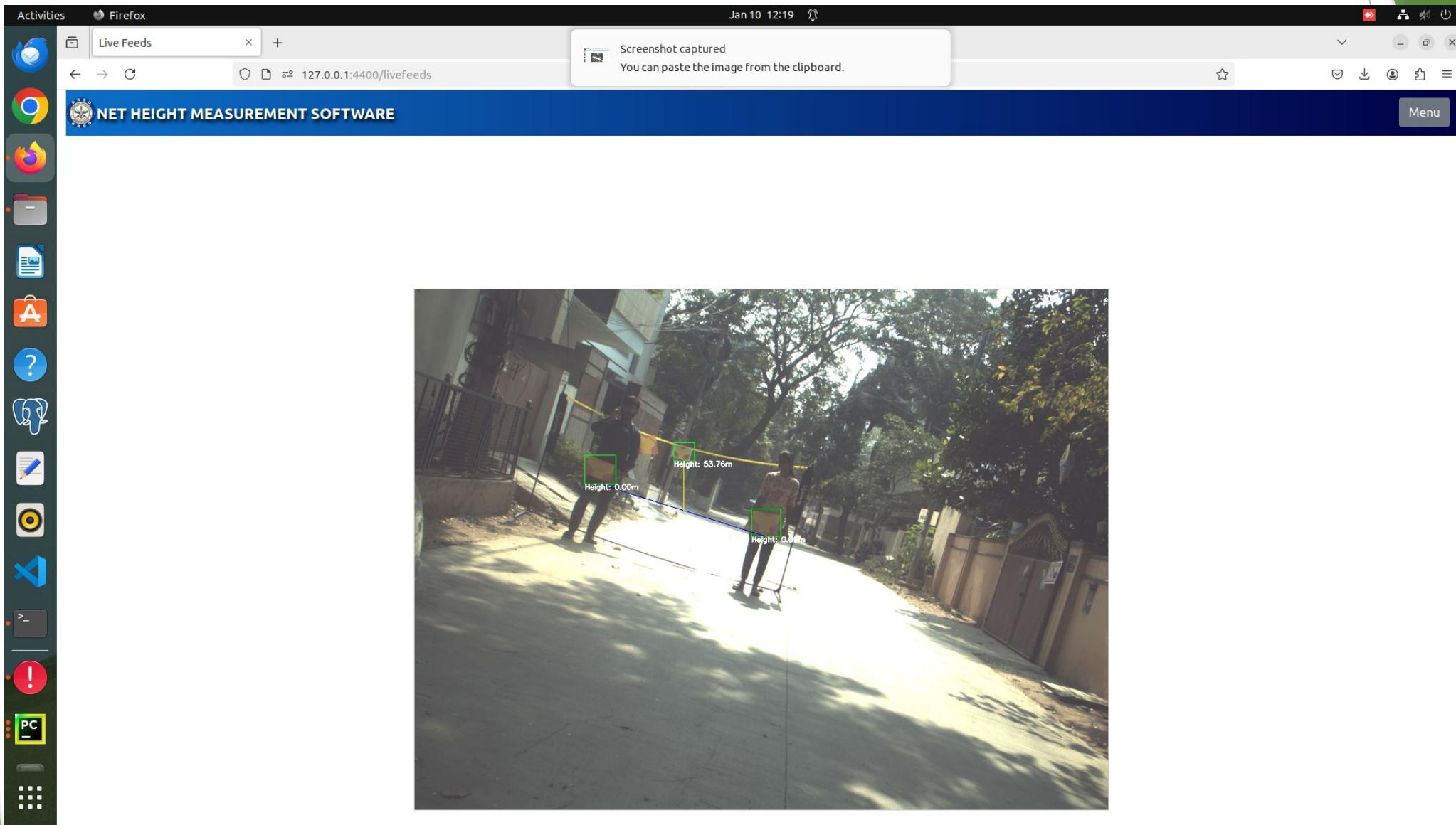
8. Frame drops during high motion scenes

Failure Condition: High-speed motion causes frame processing delays, resulting in dropped frames.

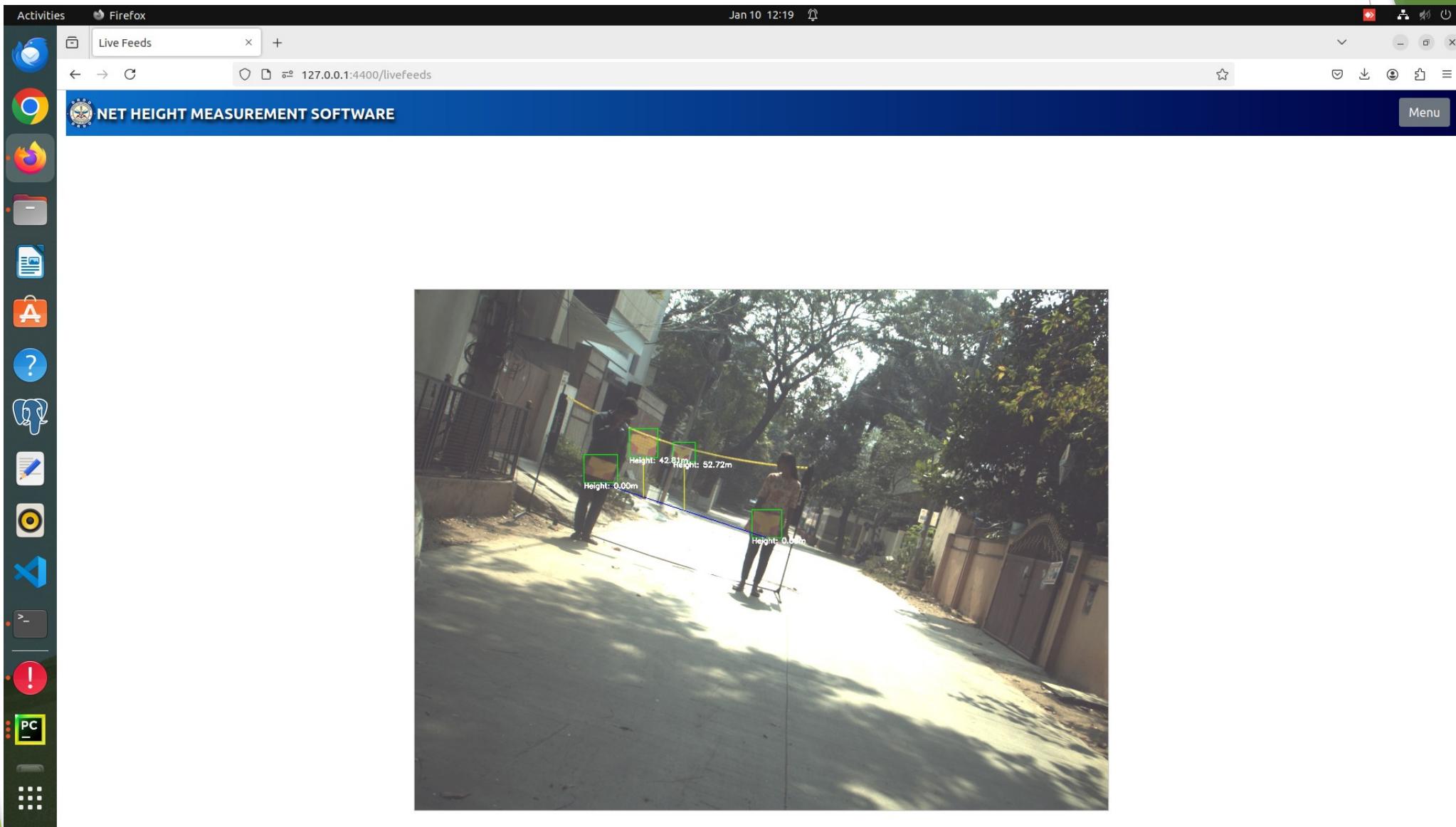
Solution :

- **Function Used:** frame buffering.
- **Explanation:** Optimizes frame capture and buffering to handle high-motion scenes without losing frames.

Output



Output



Output

Activities Google Chrome

Chat | Ganesh Kandikond x | Mail - Rakesh M - Outlook x | Live Feeds

Jan 8 18:34

Screenshot captured
You can paste the image from the clipboard.

127.0.0.1:4400/livefeeds

NET HEIGHT MEASUREMENT SOFTWARE

Menu



A screenshot of a web browser window titled "NET HEIGHT MEASUREMENT SOFTWARE". The URL in the address bar is "127.0.0.1:4400/livefeeds". The page content shows a dark, nighttime scene of a multi-story building with several cars parked in front. A person is standing near a car in the foreground. A tooltip at the top right of the browser window says "Screenshot captured" and "You can paste the image from the clipboard." The browser's toolbar includes icons for Chat, Mail, and Live Feeds. The left sidebar shows various application icons, including a terminal, a file manager, and a browser.