WaterMark Document

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PTC India
Financial Services Limited

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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.

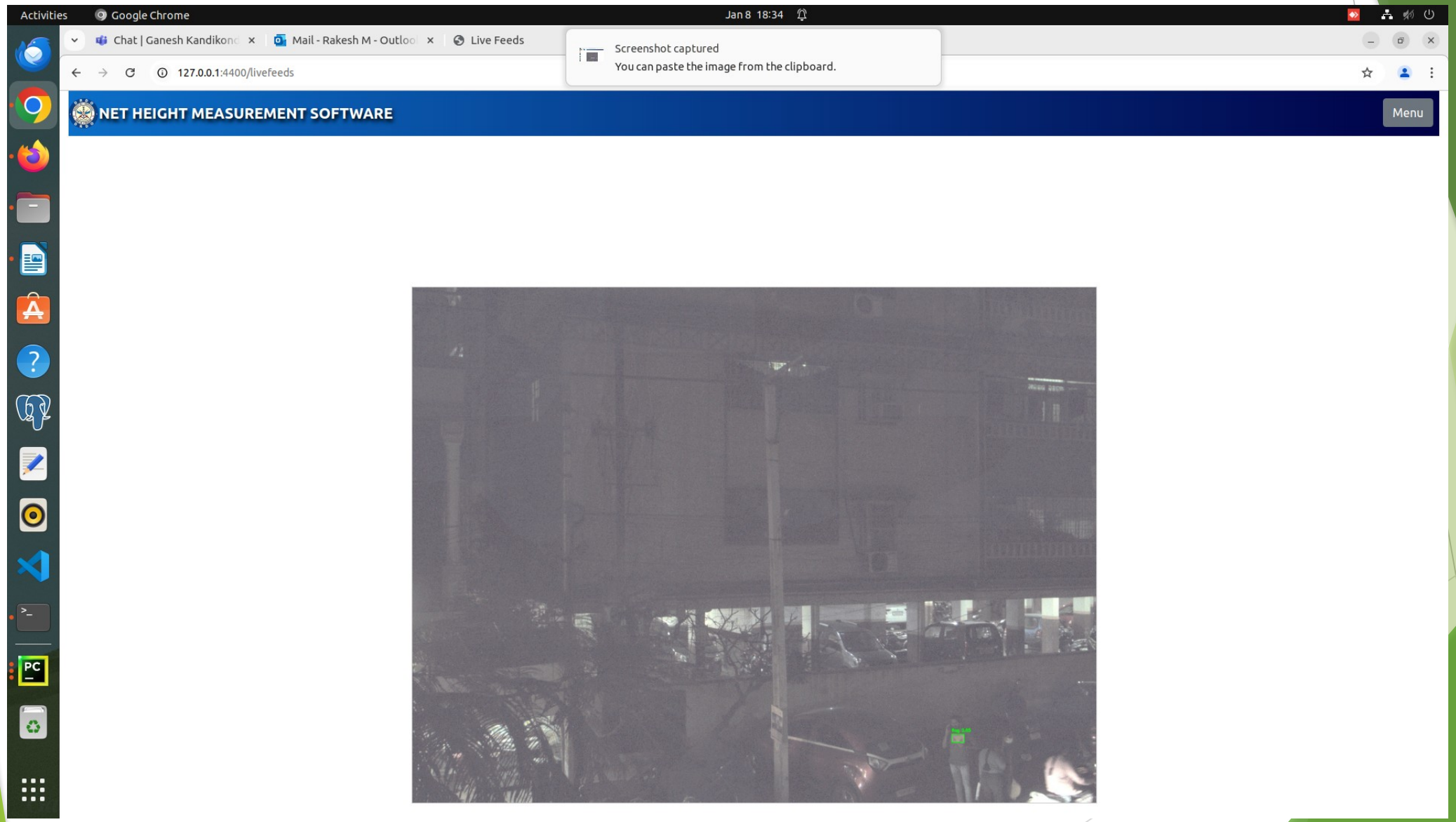
2. Poor stream quality (low resolution)

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



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.

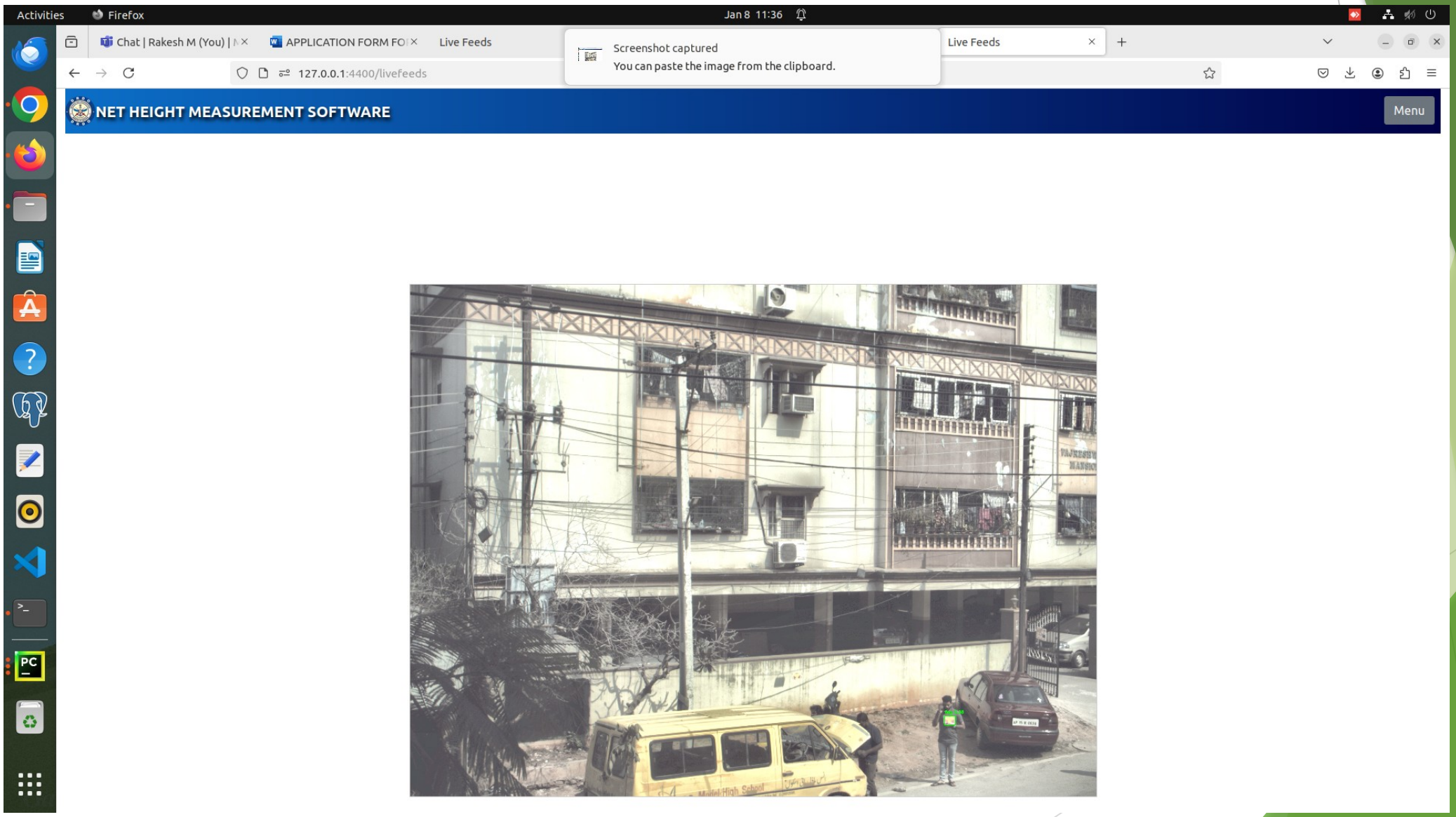
4. Improper exposure during day or night

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.

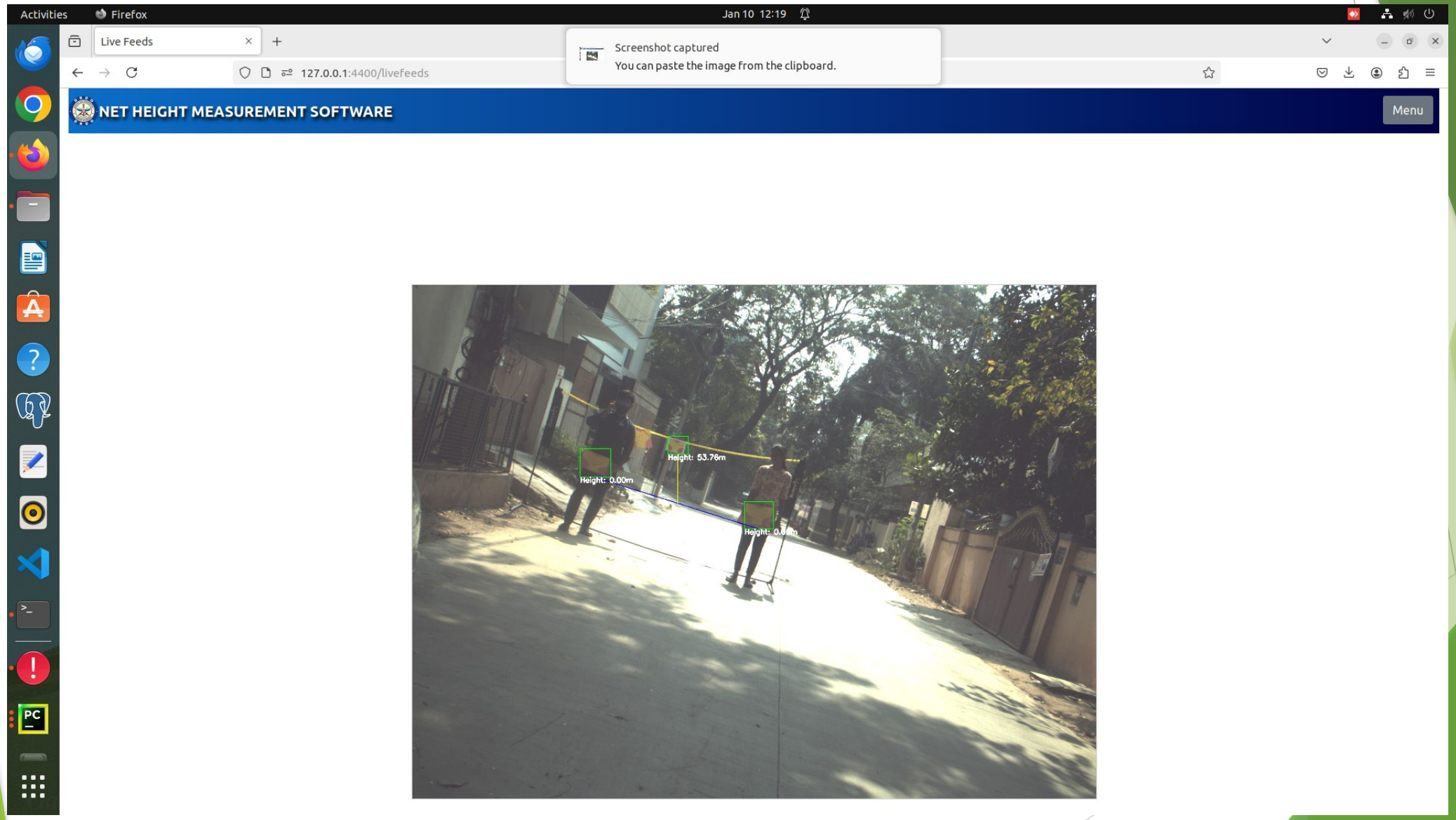
8. Frame drops during high motion scenes

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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Firefox
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Live Feeds
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Screenshot captured
You can paste the image from the clipboard.
NET HEIGHT MEASUREMENT SOFTWARE
Menu
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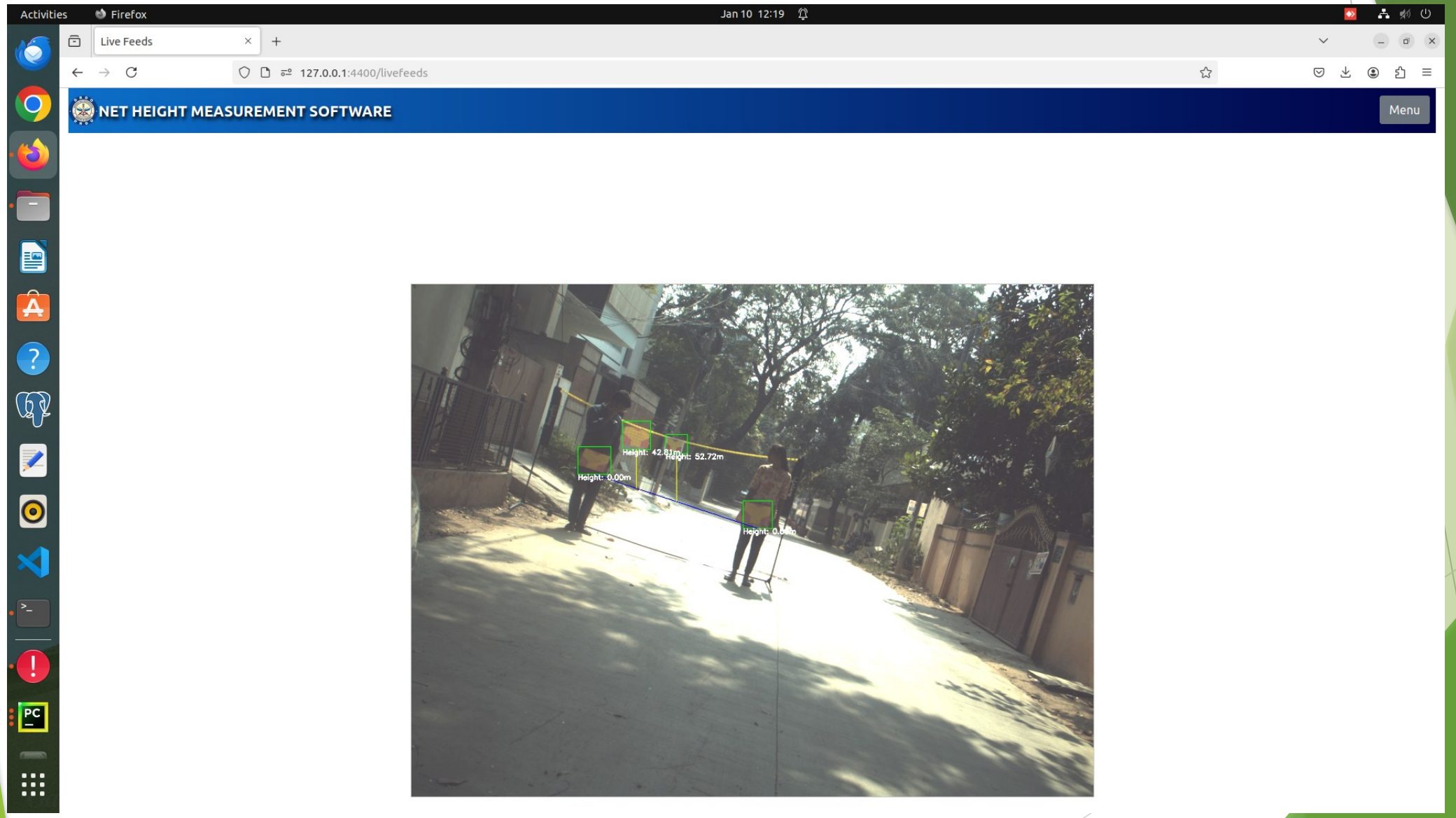
Output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Firefox
Jan 10 12:19
Live Feeds
127.0.0.1:4400/livefeeds
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Menu
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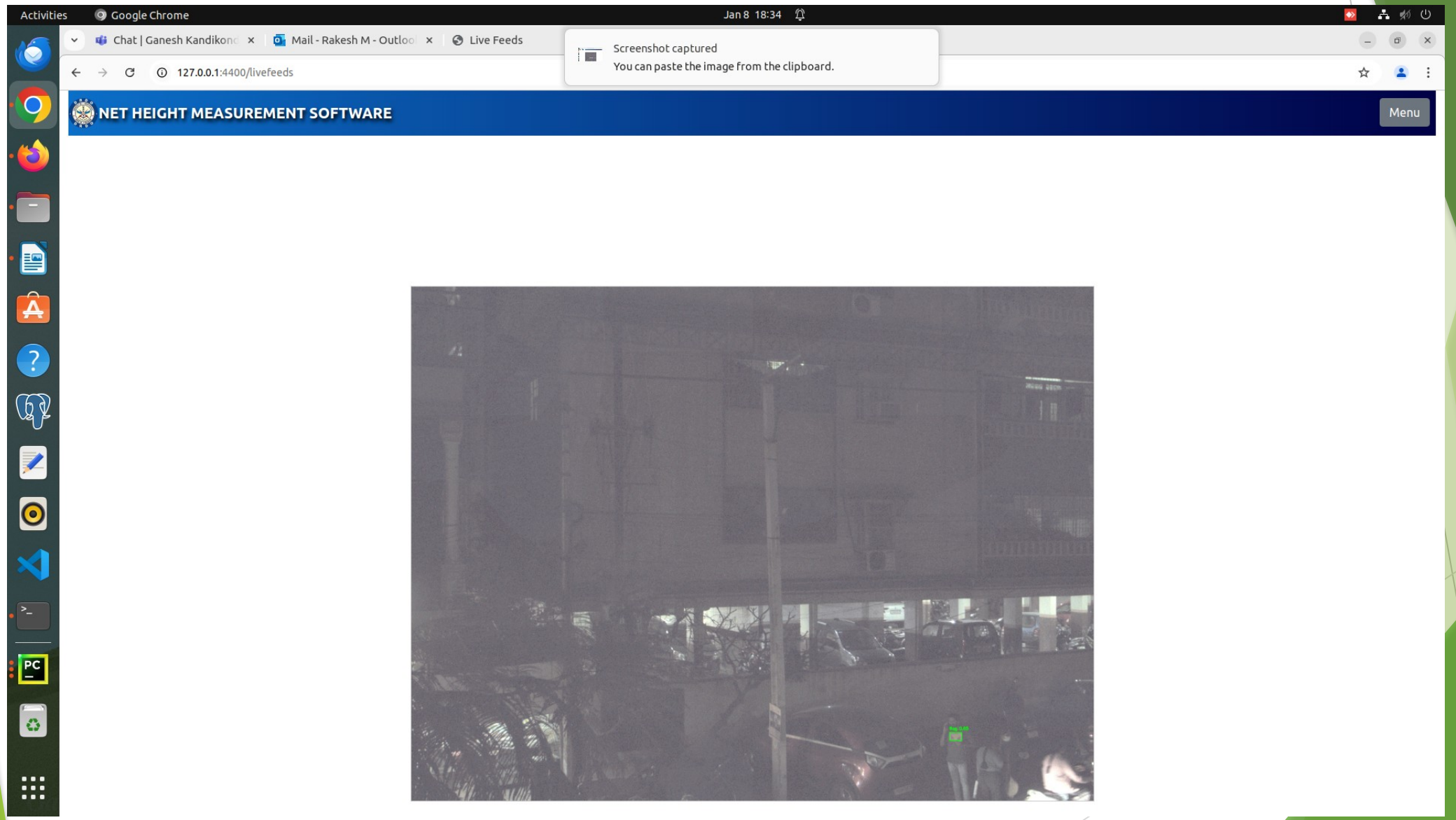
Output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Mail - Rakesh M - Outloo
Live Feeds
Screenshot captured
You can paste the image from the clipboard.
127.0.0.1:4400/livefeeds
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