

# **FALL DETECTION SYSTEM USING YOLOV8 MODEL**

Enhancing Elderly Safety through Computer  
Vision

Falls among the elderly are a serious concern,  
but quick action can make a difference

**Prompt medical attention can prevent minor injuries from  
escalating into severe complications**

**Rapid detection and response are vital to preventing  
trauma and easing anxiety and depression**

# KEY STATISTICS AND PREVENTION

More than **1 in 4** older adults report a fall each year.

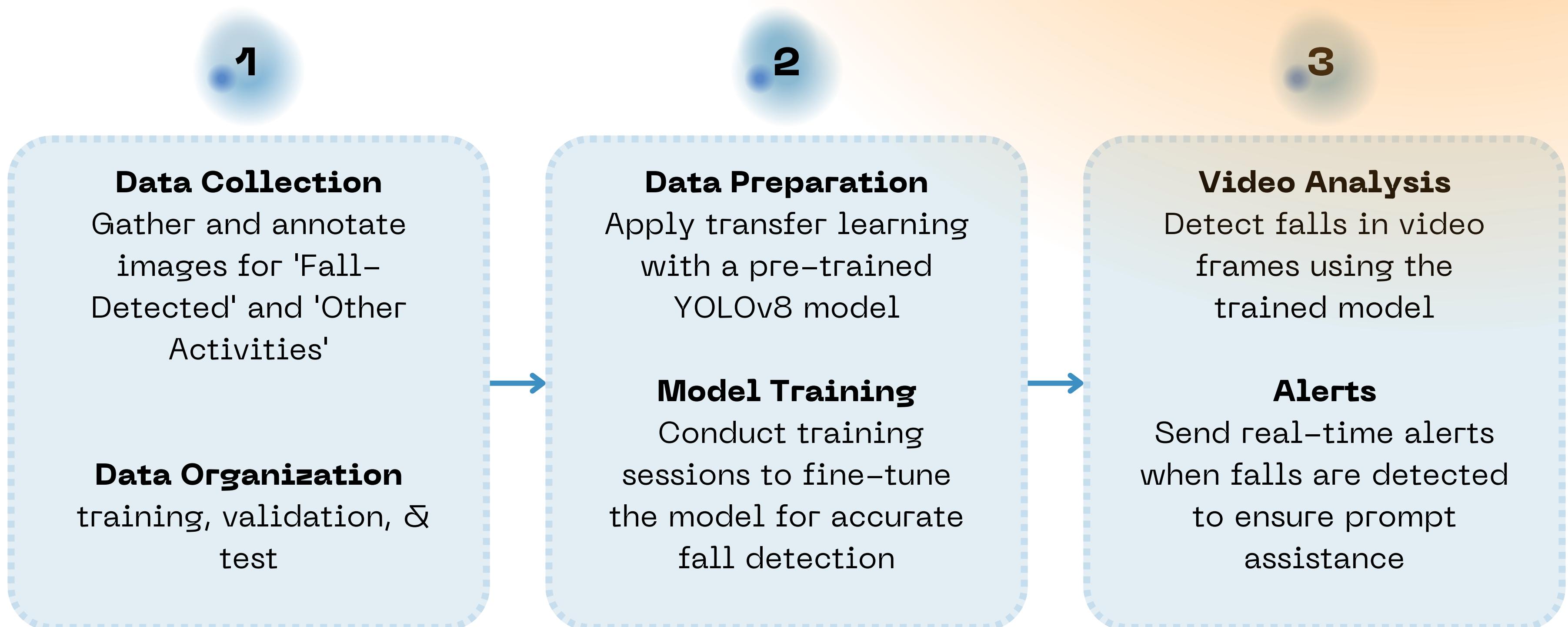
38,742 older adults aged 65+ **died from preventable falls**.

Nearly **2.9 million** older adults treated in emergency departments annually due to falls.

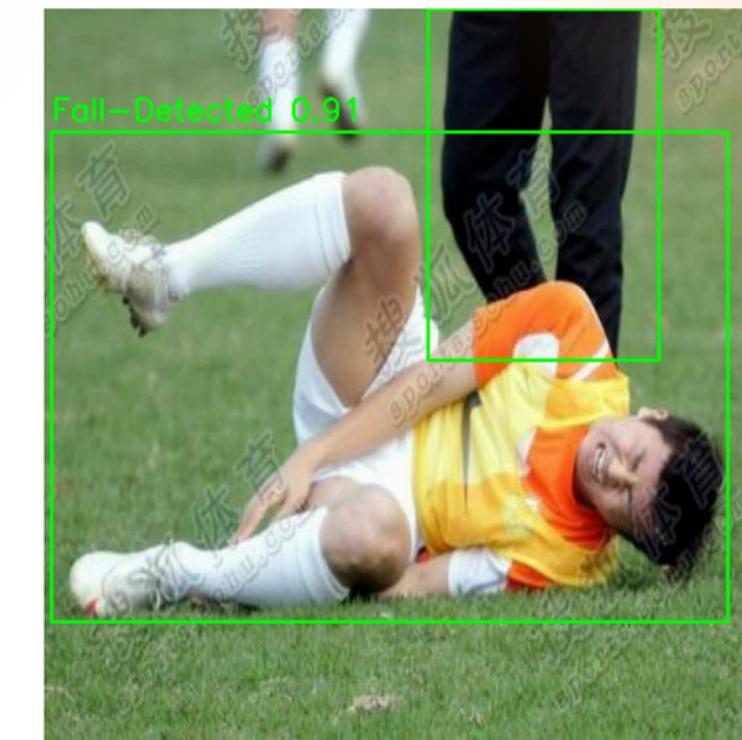
## 10-Year Trends:

- Fall-Related Deaths: **Increased by 60%** among older adults.
- Emergency Visits: **Increased by 20%** for older adults.

# METHODOLOGY OVERVIEW



# MODEL TRAINING



**Dataset**

4000+ Pictures

**Training Testing Validation**

70%

10%

20%

# MODEL PERFORMANCE

**Precision:**  
56%

**Recall:**  
45%

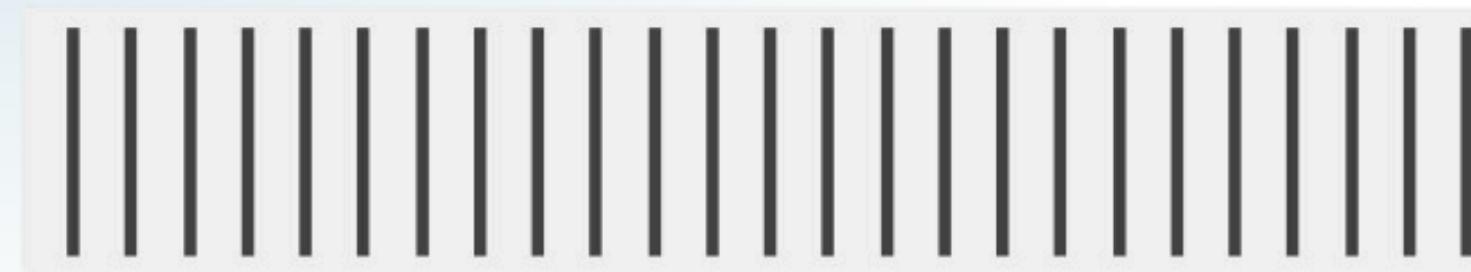
**mAP50:**  
32%

high number of false positives 😞

# VERIFICATION SYSTEM



24fps



30fps



60fps



120fps

|----- 1 SECOND DURATION -----|

'fall-detected'  
300 Frame in a row:

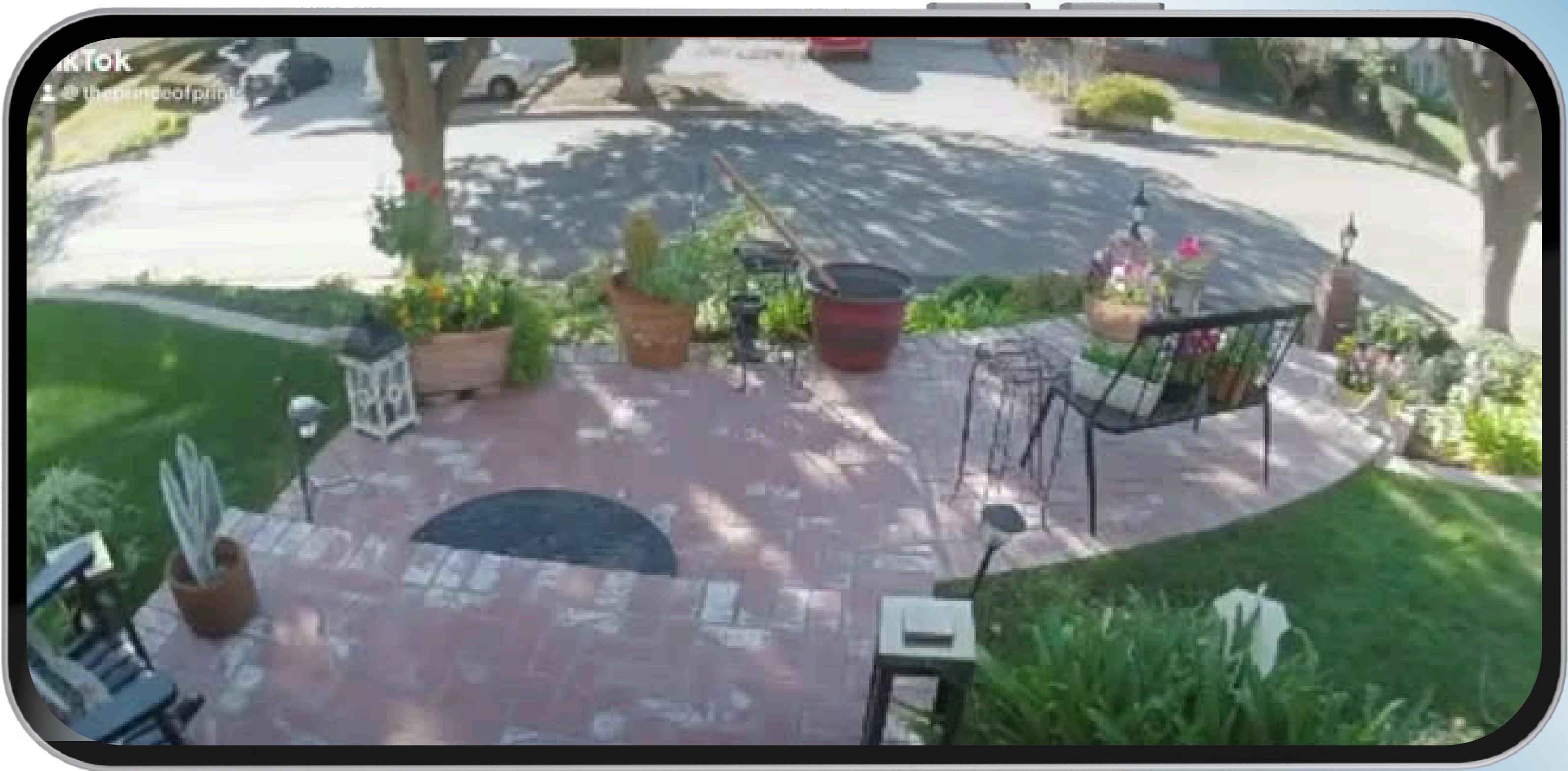
**ALERT!**

# LIVE DEMO

---

# Before Fall Detection

When your wife won't help, you're left vulnerable 😞

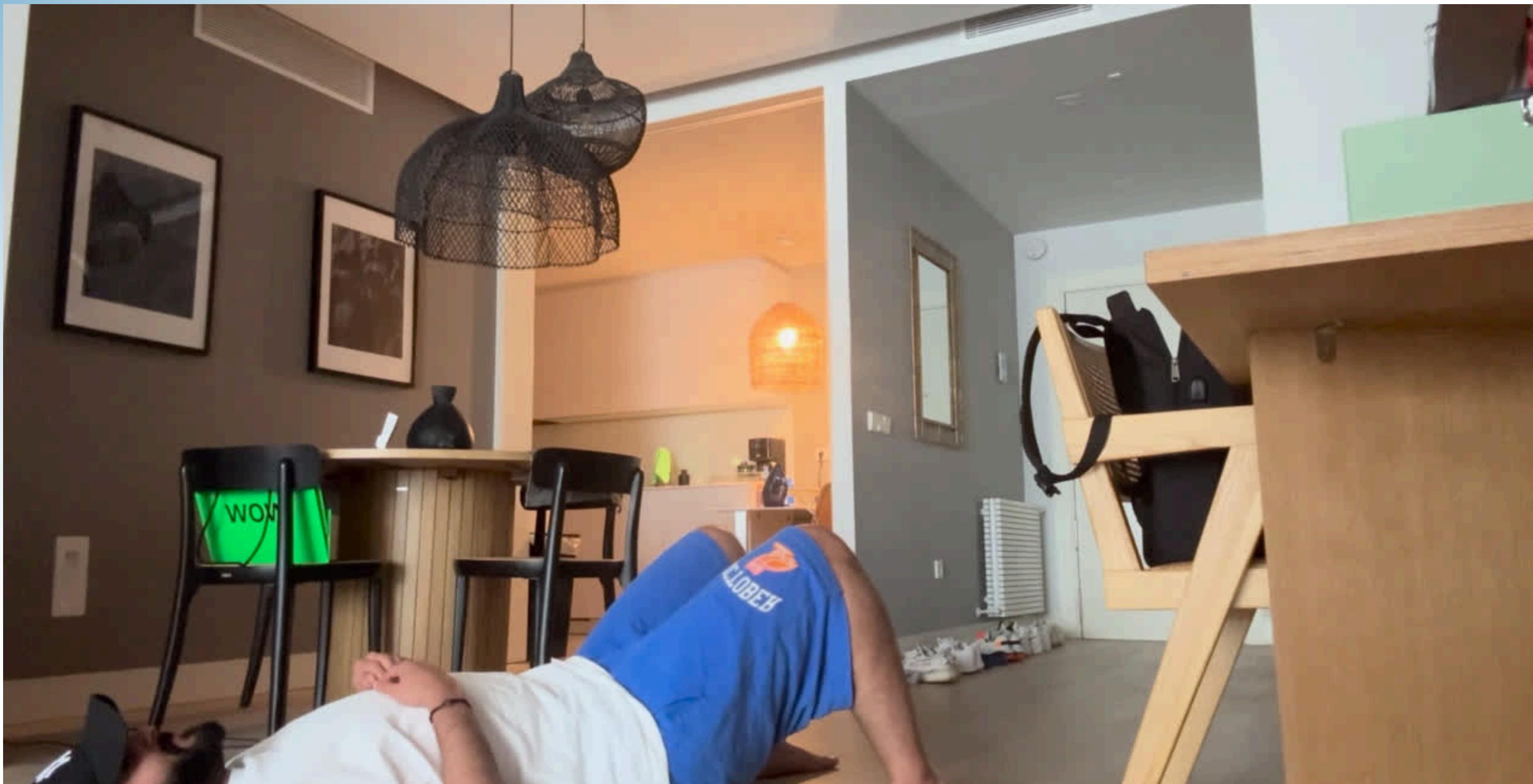


## **With Fall Detection**

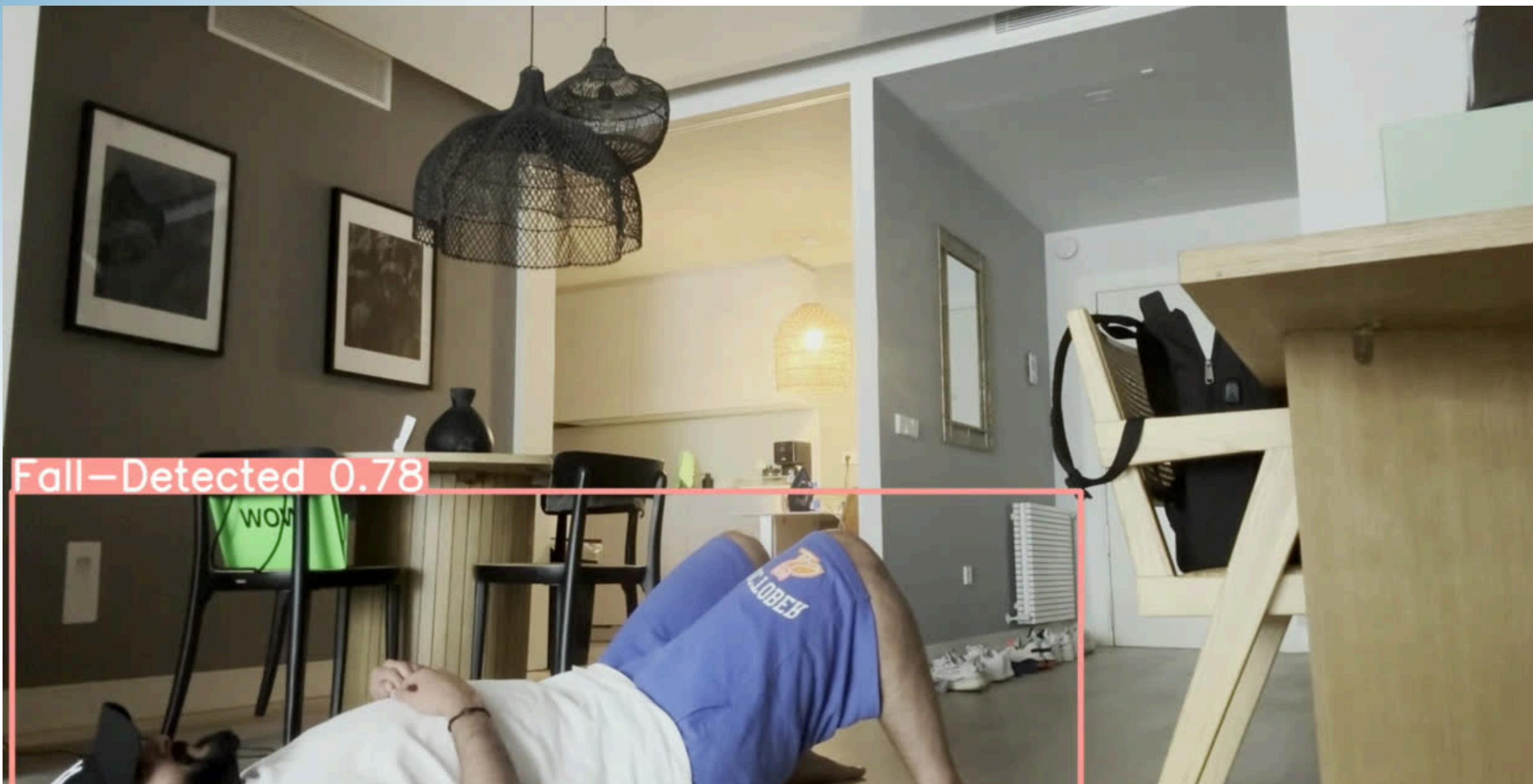
When your wife knows there's always someone ready to assist ☺



# Original



# Processed



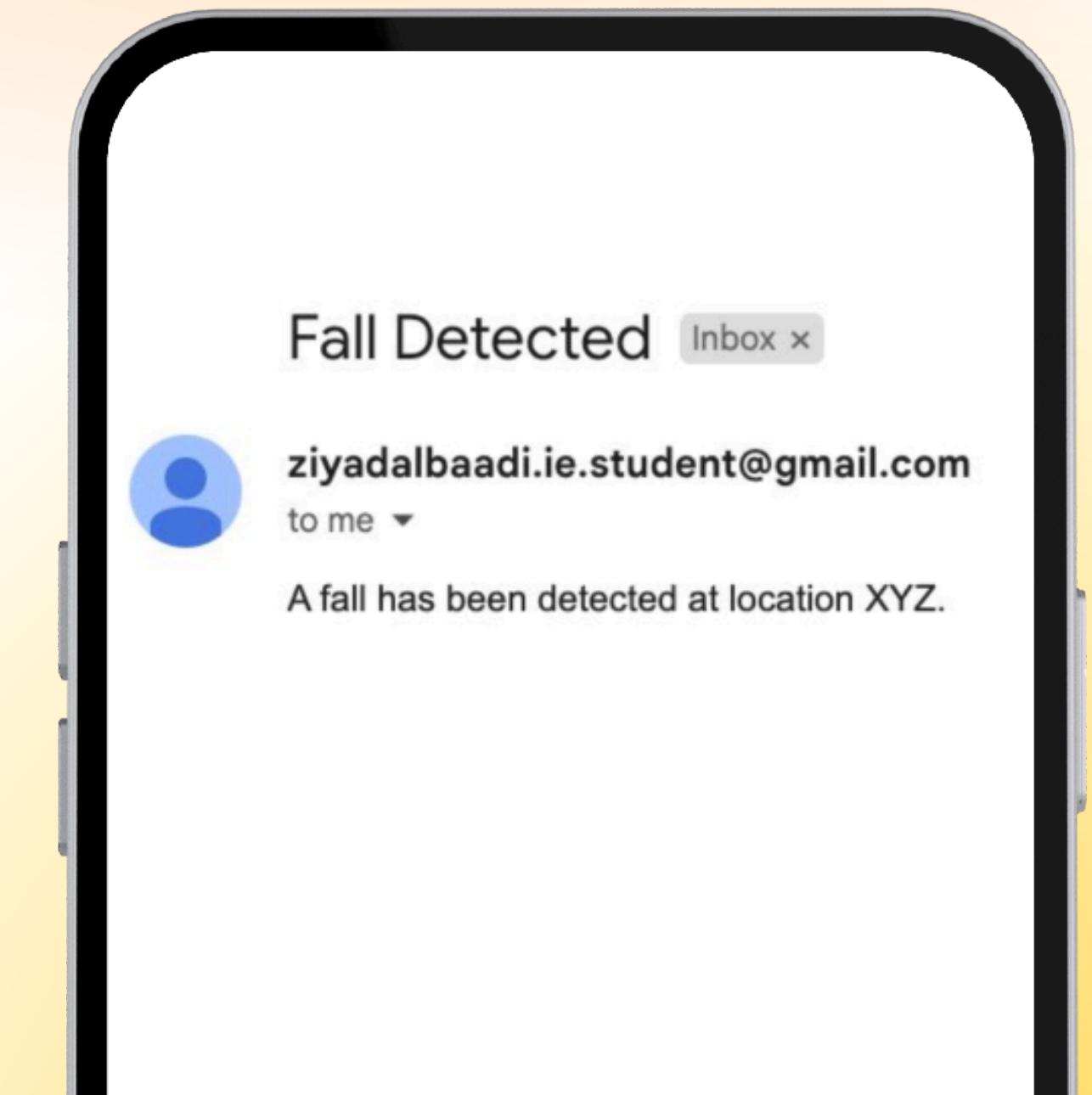
# ALERT SYSTEM INTEGRATION

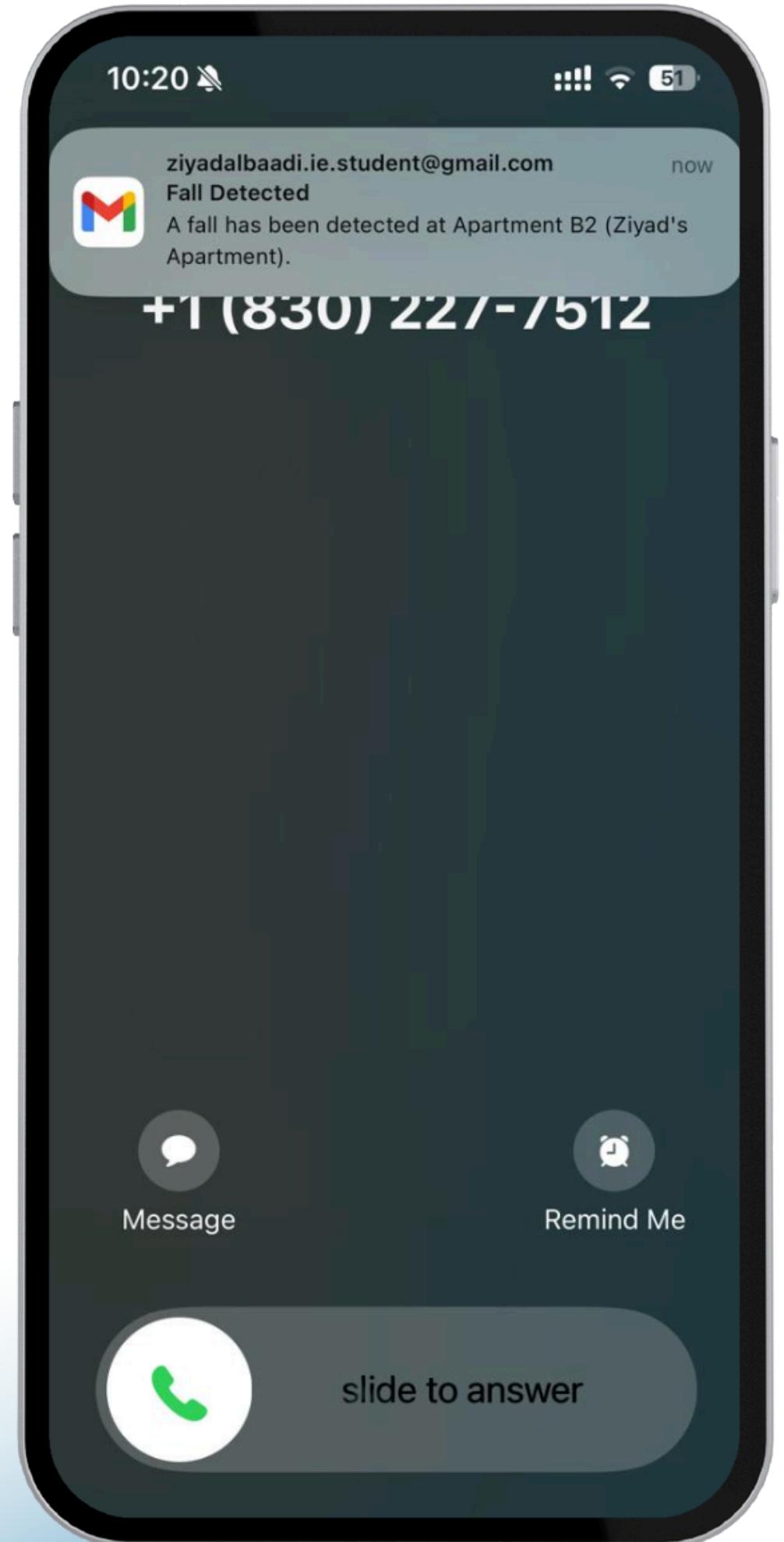


Email Notifying Your Caregivers



Immediate alerts for timely  
intervention





# ALERT SYSTEM INTEGRATION



A Phone Call to Your Emergency Contact

# KEY HIGHLIGHTS

## Advanced Technology

Utilizes computer vision to enhance safety

Employs YOLOv8 model for high-accuracy fall detection

## Real-Time Alerts

Immediate notifications to caregivers or emergency services

Reduces response time, potentially saving lives & reducing injury severity

## Reliability

Verifies detections across multiple frames to minimize false positives

Ensures continuous and trustworthy monitoring

## Impact on Healthcare

Enhances safety for vulnerable populations

Provides peace of mind to caregivers

Demonstrates the potential of technology in addressing critical healthcare challenges

# FUTURE IMPROVEMENTS

## Enhanced Database

Incorporate **more diverse fall scenarios** to improve model robustness

Address the challenge of finding **comprehensive datasets**

## Advanced Alert Systems

Implement SMS or mobile app notifications for immediate alerts.

Allow users to customize alert settings based on their preferences.

## IoT Integration

Connect the system with **IoT devices** (smart home sensors & wearables)

**Enhanced Monitoring:** Enable continuous and comprehensive monitoring across different environments, improving detection accuracy and response times

**THANK YOU**