

SmartGuard

AI-Powered Fall Detection for Elderly

No Wearables. Just Smartphone.

Just Safety.

Problem Statement:

Unobtrusive fall detection without wearables

Many seniors refuse to wear wearable devices, making fall detection ineffective. The focus is on passive, non-intrusive detection methods.

Team Details:

Divyanshu Patel

|| divyanshupatel.dev@gmail.com || 9301503581

Mohd Waqar Azim

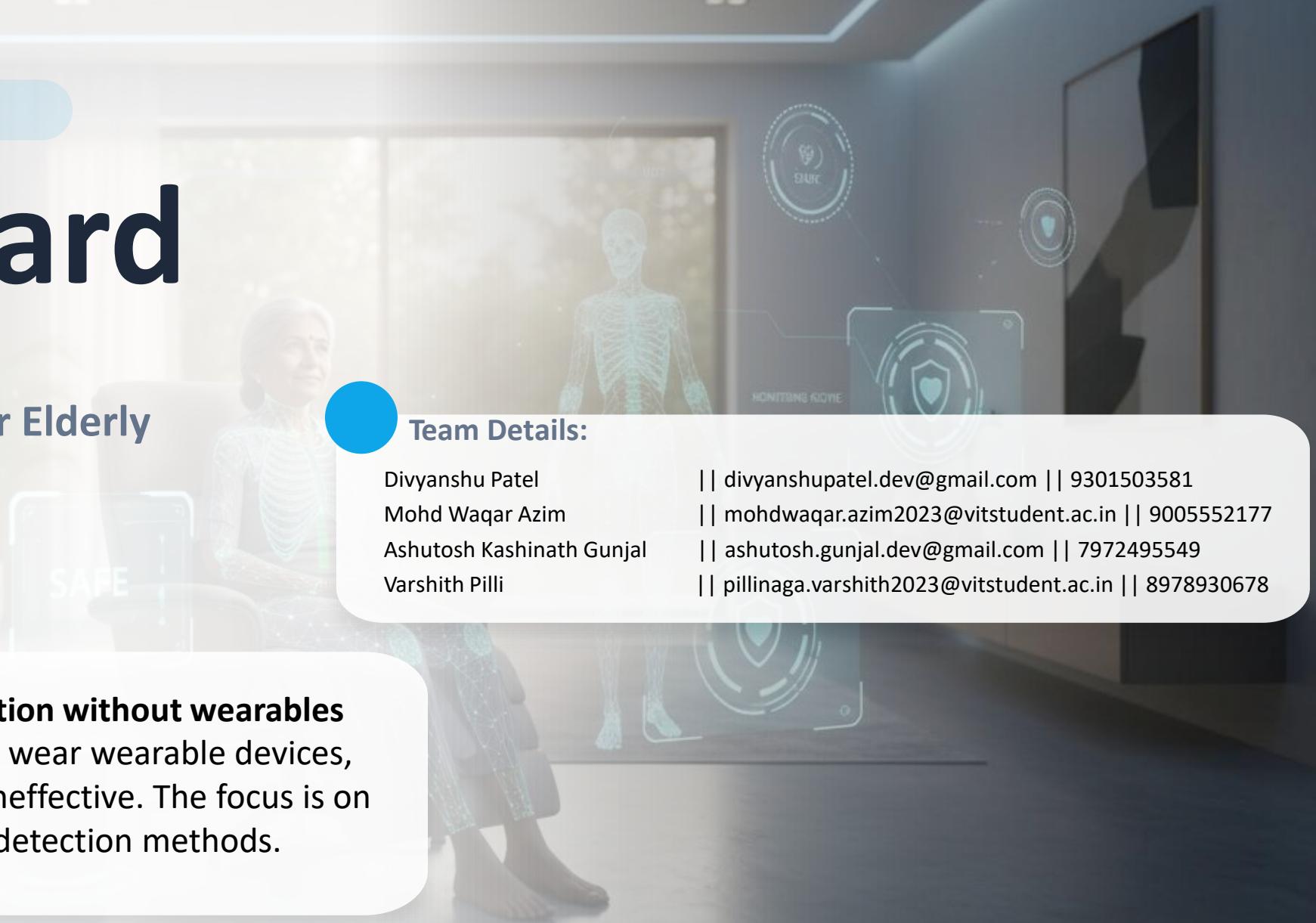
|| mohdwaqar.azim2023@vitstudent.ac.in || 9005552177

Ashutosh Kashinath Gunjal

|| ashutosh.gunjal.dev@gmail.com || 7972495549

Varshith Pilli

|| pillinaga.varshith2023@vitstudent.ac.in || 8978930678



Why Current Solutions Fail



India's Fall Crisis

500K+

Falls Annually

100K+

Hospitalizations

3,000+

Deaths/Year

₹35K

Avg. Cost/Fall

Economic Burden

Annual Healthcare Cost

₹17,500 Cr

Productivity Loss

₹8,200 Cr

Total Economic Impact

₹25,700 Cr



The Wearable Barrier

70%

of elderly REFUSE wearables

Current solutions exist, but elderly won't use them



Discomfort

24/7 wear feels intrusive

76%



Cost Barrier

₹10,000+ unaffordable

81%



Tech Complexity

Too difficult to use

73%



Forgetfulness

Easy to lose, forget to charge

58%



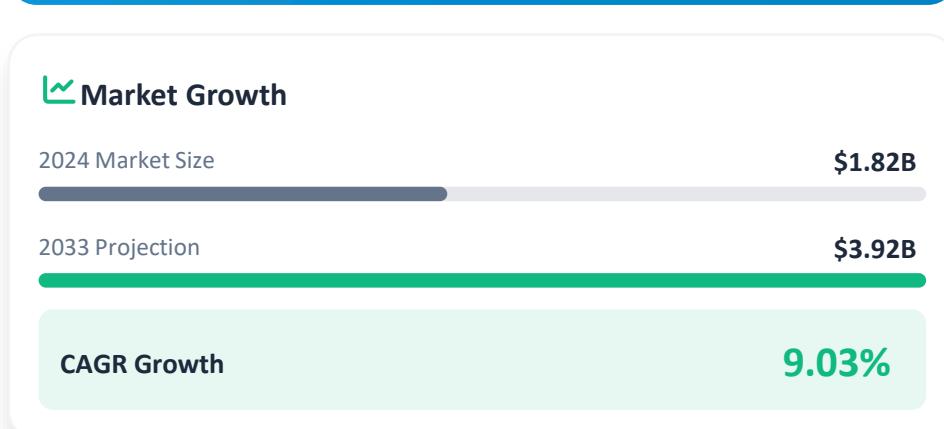
Key Insight: The problem isn't technical, it's **ADOPTION**. Solutions exist, but elderly won't use them.

Massive Market Opportunity



Competitive Landscape

Feature	SmartGuard	Wearables	Competitors
Hardware Cost	₹0	₹10K-20K	₹5K-15K
Adoption Rate	~80%	~30%	~25%
Privacy	95-100%	30-50%	20-40%
Offline Use	Unlimited	3-7 days	1-2 days
Setup Time	<1 Hour	2-3 Days	1-2 Days
Scalability	100M+	Limited	Limited



SmartGuard System Architecture

 Key Insight: Use the phone elderly ALREADY HAVE

End-to-End Flow



1. Smartphone Camera

Elderly's existing phone captures video feed • No additional hardware needed



2. MediaPipe Pose Estimation

99%+ accuracy • 17 key body points • On-device processing • <100ms inference



3. Fall Detection Algorithm

Height drop + Acceleration spike + 2-sec confirmation • >90% precision • <10% false positive



4. Backend Alert System

Flask API + Firebase DB + Twilio WhatsApp • <200ms processing • 99.5% delivery rate



5. Caregiver Notification

WhatsApp alert with location • Response buttons: OK / HELP • <5 seconds total latency

Performance Metrics

Pose Accuracy

99%+



Fall Detection

>90%



False Positive

<10%



Alert Latency

<5 sec



Privacy First

✓ 100% On-device processing

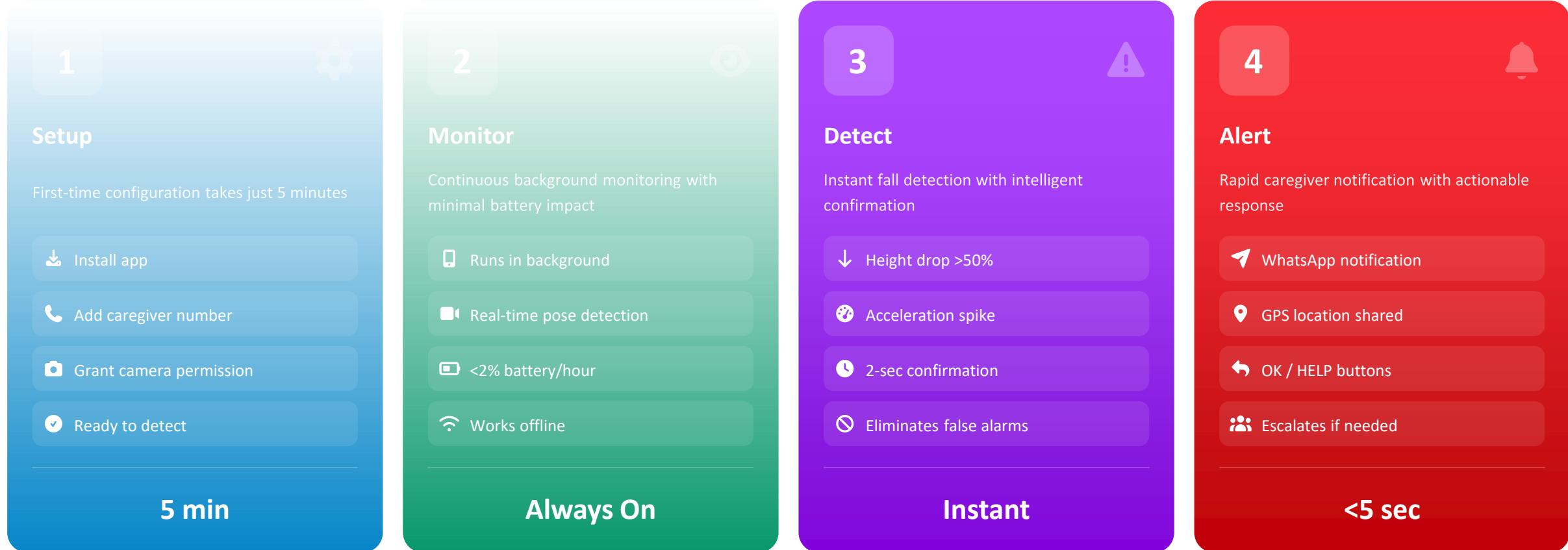
✓ No video upload to cloud

✓ Skeleton points only saved

✓ GDPR compliant by design

✓ Works offline fully

How It Works: The 4-Step Process



Timeline: From Fall to Response



Fall Occurs



Detected



Alert Sent



Caregiver Notified

5 Unique Competitive Advantages



1. Wearable-Free = Adoption Breakthrough

Eliminate the #1 barrier to elderly care technology adoption

Wearables

30%

SmartGuard

80%

2.7X better adoption rate



4. Offline Capability

Works without internet—critical for rural India coverage

100%

Urban

80%

Semi-urban

30-50%

Rural

3X larger addressable market



2. Zero Hardware Cost = Maximum Scale

Use existing smartphones—no inventory, no logistics, no delays

Wearable Cost

₹10K-20K

SmartGuard Cost

₹0

2000X scalability advantage



5. Immediate Deployment

From download to full protection in under 24 hours

SmartGuard

<24 Hours

Wearables

2-3 Weeks

20X faster time-to-value



3. Privacy-First Design

100% on-device processing—no video ever leaves the phone

- ✓ No cloud video upload
- ✓ Skeleton points only
- ✓ GDPR compliant



Bottom Line: We're not competing with wearables. We're **MAKING THEM OBSOLETE**.

Business Model & Social Impact

Financial Projections

Year 1

Pilot Homes
10 facilities

Active Users
500 elderly

₹60L

Year 2

Deployed Homes
500 facilities

Active Users
25,000 elderly

₹3Cr

Year 3

Deployed Homes
2,000+ facilities

Active Users
100,000+ elderly

₹12+Cr

Unit Economics

Monthly Revenue

₹5,000

Cost per Fall Prevented

₹2,000-5,000

ROI for Nursing Home

<30 Days

Social Impact Metrics



Falls Prevented (3-Year)
251,000

1,000

Year 1

50,000

Year 2

200,000

Year 3



Lives Saved (By Year 3)
10,000+

Based on 3-5% fall mortality rate



Healthcare Savings (3-Year)
₹878+ Cr

At ₹35,000 average cost per fall



100K+

Hospital Days Saved



60%

Caregiver Stress Reduced

Join Us in Building the Future of Elderly Elderly Care



What We'll Deliver

- 📱 Working Mobile App with real-time fall detection
- ⌚ AI Algorithm with 99%+ pose accuracy
- 🔔 Alert System with WhatsApp integration
- 🎥 Demo Video showing complete flow



Our Vision

- 🕒 3M Nursing home pilots across India
- 🕒 Y1 1,000 falls prevented in first year
- 🕒 Y3 200,000+ falls prevented annually
- ♾ Smarter, safer elderly care for all India

Every 30 seconds, an elderly person falls.

70% refuse wearable solutions.

SmartGuard eliminates that barrier.

Questions?

Let's make elderly care smarter, safer, and accessible to all.