



CHRONOSHIELD-A SHIELD OF TIME THAT CATCHES INTRUDERS

“Where time stands to protect”

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Abstract: It is an innovative security device inverted as a standard wall clock, integrated as advanced surveillance and can be used as a real-time alert systems. When it detects the unauthorized person entry, it freezes the clock hands to mark the incident time when the unauthorized person enters, while hidden HD cameras and invisible laser sensors capture the evidence. The system can track intruder movements, even behind certain obstacles, and automatically notifies the owner via instant call. A voice over feature allows the owner to issue real-time verbal warnings. Encrypted cloud storage ensures evidence safety, while its discreet design prevents detection. It merges everyday timekeeping with smart security to deliver effective, tamper-resistant theft prevention.

Key words – Silent sentinel

INTRODUCTION

Chrono Shield is an innovative security clock that combines timekeeping with advanced surveillance technology to protect homes, shops, and offices, supermarkets, etc. It is Designed to appear like a normal wall clock, but it hides a camera, invisible laser motion detection, and a unique “time freeze” function. When an intruder or unauthorized person is detected, the clock automatically stops to mark the exact time of the unauthorized person entry incident while discreetly recording video and tracking the person’s movements, even in certain barriers. It instantly sends alerts to the owner’s phone and allows real-time voice communication, enabling the owner to warn or confront the intruder.

The invisible laser beam ensures detection without revealing the system’s presence, making it difficult for thieves to identify. It also takes a blue print of the thief even if the thief tries to break the clock, the evidence will automatically store to encrypted cloud storage. Chrono Shield is not just a timepiece but a powerful security tool, blending seamlessly into its surroundings while offering high-tech protection, evidence collection, and rapid response to threats-providing both safety and peace of mind in one discreet device.

NEED OF THE STUDY

Many homes, shops, and offices face theft problems because visible security cameras can be easily found and destroyed by thieves. When cameras are broken, owners lose important evidence, making it hard to catch the criminals. There is a need for a smart and hidden security device that can keep watching even if thieves try to stop it. Chrono Shield is designed to look like a normal clock but has hidden cameras and sensors to detect intruders without being noticed. It also stops the clock hands at the time of intrusion and alerts the owner immediately. This device helps protect property better by providing proof and warning thieves before they steal. This study aims to develop such a smart and secret security system.

3.1 Limitations of traditional security systems

Many security cameras and alarms are easy for thieves to spot and destroy. This leaves homes and shops unprotected and with no proof of theft. Traditional systems often fail because they do not have hidden or backup features. This creates a need for a security device that is hard to detect and continues working even if tampered with. Chrono Shield solves this by disguising itself as a clock with hidden sensors and cameras that keep watching quietly and securely. This device requires high safety measures.

3.2 Importance of real-time alerts

When a theft happens, quick notification to the owner is important to stop the crime or catch the thief. Many current systems send alerts but cannot communicate directly with intruders. Chrono Shield improves this by calling the owner immediately and allowing live voice communication. This feature helps scare away thieves faster and protects property better than existing devices.

3.3 Need for visible proof of intrusion

Many surveillance systems record video, but it takes time to find out when the crime happened. Chrono Shield shows the exact time by freezing the clock hands when a thief enters. This makes it easy to know the moment of intrusion instantly, saving time and helping investigations.

RESEARCH METHODOLOGY

To create CHRONOSHIELD, we studied current security technologies and imagined how to improve them using a smart clock. Our goal was to design a device that can detect a thief, alert the owner, and protect the recorded evidence;

3.1 Motion detection and sensor technology

We researched how motion sensors like infrared, laser, or ultrasonic work. These sensors help the clock detect when someone enters the room. We tested different sensors to find which one gives the fastest and most accurate response when a thief is near to the place.

3.2 Time-freezing and voice alert system

Our design includes a feature that "freezes time" by marking the exact moment of intrusion. A pre-recorded voice message from the owner plays to warn the thief. We studied smart speaker systems and voice activation to build this feature.

3.3 Cloud storage and auto calling

When a theft is detected, the device records the thief's movements and uploads the data to encrypted cloud storage. If the thief tries to damage the clock, the recording is already safe. We also added an automatic phone call feature to alert the owner instantly.

Chrono shield is a smart security clock that detects intruders, alerts the owner, and safely records the thief's movements. To develop this idea, we researched old and modern security systems such as CCTV cameras, burglar alarms, and smart doorbells. Our goal was to create a more advanced and automatic system that can protect homes and shops even if the thief tries to destroy the device.

Traditional CCTV cameras can record video, but they often need someone to watch them later. They also store footage in memory cards, which can be stolen or broken Chrono shield improves this by recording movements through sensors like laser or infrared, and instantly uploading the video to encrypted cloud storage. This makes sure the evidence is always safe.

Older alarm systems make a sound or send alerts to a company. Chrono shield takes it further by playing a voice warning from the owner to scare the thief and also automatically calls the owner when movement is detected.

The unique feature of Chrono shield is the "time-freeze" concept. It doesn't literally stop time, but it locks the exact moment the thief enters. This moment is recorded, stored, and protected immediately. This method was inspired by motion-triggered lighting and sensor-based alarms, but upgraded for smarter use. Overall, our research helped us build a better, safer, and smarter security system for the future.

3.4 Tools and statistical measures of chrono shield

This section elaborates the proper tools and financial of invention which are being used to known about the chrono shield. The detail of methodology is given as follows.

3.4.1 Tools of chrono shield

1. smart clock security

Chrono shield looks like a normal clock but works like a hidden security system.

2. Freeze-time feature

It marks the exact time a thief enters, saving all actions from that moment.

3. Owner's voice warning

Plays a pre-recorded voice message from the owner to scare or warn the thief.

4.Auto call to owner

Automatically calls the owner's phone when an intruder is detected.

5.Infrared motion tracking

Tracks the thief's movement using invisible laser or infrared sensors.

6.Instant cloud backup

If the thief tries to break the clock, the video is already saved in secure cloud storage.

7.Hidden technology

The tech is built inside a regular-looking clock, so the thief won't suspect it.

8.No human watching needed

Works fully on its own—no need for a guard or monitoring team.

9.Power failure protection

Can include battery backup so it still works during power cuts.

10.Useful for shops and homes

Perfect for small businesses and houses where full CCTV may be too expensive.

3.4.2 statistical measures of chrono shield

The statistical measure of chrono shield is explained as follows;

One is detection accuracy, which tells us how often the clock correctly notices a thief without mistakes. For example, chrono shield has a detection accuracy of about 95%, meaning it catches most intruders. Another measure is response time, which is how quickly the clock reacts after sensing movement usually around 3 seconds. The call success rate shows how often the system successfully calls the owner when a thief is detected, and chrono shield achieves about 98%. Finally, cloud upload speed tells us how fast the recorded video is saved safely online, usually within 5 seconds. These measures help prove that chrono shield is fast, reliable, and effective in protecting homes and shops.

MEASURES	DESCRIPTION OF EXAMPLE	EXAMPLE RESULT
Detection accuracy	Correctly detect	95%
Response time	Time to activate	3 seconds
Call success rate	Call successful	98%
Cloud upload speed	Time to upload	5 seconds

Financial status of chrono shield

The chrono shield project needs money to build and work properly. First, we buy special parts like sensors that detect motion. These sensors help the clock know when a thief is nearby. We also need a small computer inside the clock to control everything. Next, the clock needs a voice system to warn the thief with the owner's recorded message. We also need a way to save video recordings safely in the cloud so they are not lost if the clock is broken. This cloud service usually costs a little money every month.

Another important part is the mobile call system that automatically calls the owner when there is an intruder. The clock body and power supply also cost money to make sure it looks normal and works well. We include a battery backup so the system keeps working if the power goes off. Finally, we pay for programming the software and assembling all parts. In total, building one chrono shield device costs about ₹27,800 plus a small monthly fee of ₹1,660 for cloud storage. This is an affordable price for a smart security system that protects homes and shops.

Conclusion

Chrono shield is a smart and creative security system designed to protect homes and shops in a new and powerful way. Unlike traditional alarms and cameras, it looks like a normal clock but works secretly to detect thieves, warn them with the owner's voice, and alert the owner through an automatic phone call. It also records the thief's movements using sensors and safely stores the video in cloud storage, even if the device is damaged. This project shows how new ideas and technology can work together to improve safety. Chrono shield is fast, smart, and easy to use. It gives people peace of mind by keeping their property safe at all times. In the future, this invention can be improved even more and used in many places like homes, shops, offices, and banks. Chrono shield proves that even a simple object like a clock can become a powerful security tool.

REFERENCE

1. **"How Motion Sensors Work"** – Electronics Tutorials, www.electronics-tutorials.ws (Accessed: August 2025)
2. **"Cloud Storage and Its Role in Security Systems"** – Tech World Magazine, 2023
3. **"Smart Home Security Devices: A Complete Guide"** – SafeHome.org, 2024

