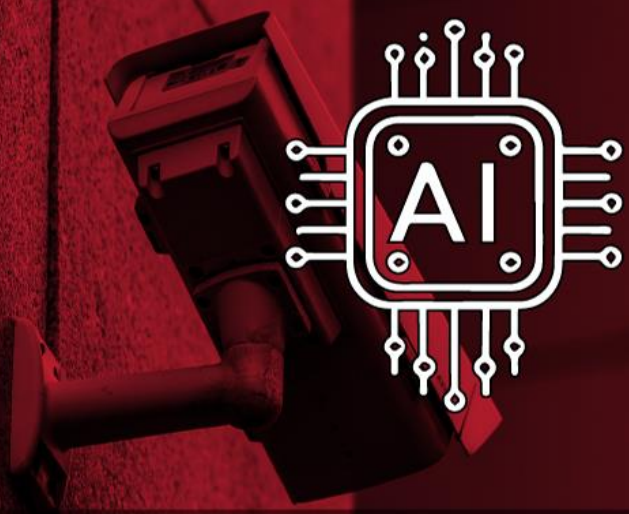
comsur™

the missing piece of CCTV

GET THE BOOK

"SEE WHAT THE CAMERA SAW"

THE FOOTAGE WHISPERER



'BETTER' AI VIA DAILY AUDITS
NO MORE DATA WALL

100+ TOPICS - AIRPORTS TO ZOOS

GAUTAM D. GORADIA

UTILITY VALUE OF COM-SUR™ FOR ART GALLERIES

WELCOME

AUDIT HOURS OF FOOTAGE IN MINUTES FIND OUT HOW COM-SUR, THE BEST 'MOUSETRAP' WILL HELP

"Seeing is believing - See what the camera saw"

CCTV surveillance is common at art galleries worldwide, but footage is often only reviewed reactively. Our company realized this problem early-on and has developed the world's only CCTV video footage auditing software that encourages daily auditing (hours in minutes) of CCTV footage, filling the gap for a complete "workflow". The software works with existing cameras and VMS, regardless of type/brand, and provides a standardized approach for intelligent incident reporting. Our software also offers exceptional investigative capabilities.

'COM-SUR' – THE WORLD'S ONLY CCTV VIDEO FOOTAGE AUDITING, SMART BACKUP, AND STANDARDIZED INTELLIGENT INCIDENT REPORTING SOFTWARE – THE MISSING PIECE OF CCTV

COM-SUR is the world's only CCTV video footage auditing, smart backup, and standardized intelligent incident reporting software that serves as a complete workflow and force multiplier. It helps audit 24 hours of footage in minutes, reduces data size, creates standardized intelligent reports and delivers business intelligence. COM-SUR helps unlock hidden information in CCTV footage and enables people to gain actionable intelligence, improve homeland security, prevent crime and losses, identify and mitigate threats and hazards, and improve operational efficiency. It empowers people to gain new jobs as CCTV video footage auditors and start new businesses of auditing video footage. Like MS Office, COM-SUR is an enabler that makes it easy to work with CCTV cameras in a standardized way, leading to better decision-making. It also offers exceptional investigative capabilities.

BETTER AI VIA DAILY AUDITS – NO MORE DATA WALL

COM-SUR delivers 'BETTER' AI by transforming how organizations approach CCTV video

surveillance, auditing, and post-event analysis. By generating a constant stream of real-time, site-specific data—Continuous Frontier Data—COM-SUR ensures that AI systems are never starved for fresh, actionable insights, which is key for building custom models and addressing key challenges like data exhaustion, data walls, and data cascades that often hinder AI from performing at full potential.

A key to making AI more effective lies in continuous learning from real-world incidents through daily and post-event auditing. COM-SUR enables AI models to evolve based on audit findings and incidents that go beyond real-time detection. By auditing daily footage, capturing exceptions, and feeding this data back into AI models, COM-SUR significantly improves the accuracy of AI systems, helping to reduce false alarms and enhance detection capabilities. This continuous feedback loop ensures that AI learns from what might have been missed in real-time, making it smarter and more reliable over time.

By integrating Reinforcement Learning from Human Feedback (RLHF) and Explainable AI (XAI), COM-SUR ensures that AI systems are continuously refined, transparent, responsible, and contextually aware. However, recognizing that AI can only perform tasks it's programmed for, human intelligence and intervention remain essential in verifying and refining AI outcomes. With COM-SUR, businesses can leverage AI as a powerful tool while maintaining human oversight, ensuring more accurate and informed decision-making—ultimately leading to 'BETTER' AI. This not only enhances surveillance but also paves the way for Augmented Intelligence, where AI-driven insights empower human operators while keeping them at the center of decision-making.

HOW COM-SUR SMARTLY REDUCES 'VIDEO' STORAGE SIZE

COM-SUR employs an innovative approach to smartly reduce the amount of video to be audited and consequently the storage size of videos. Regardless of the video's frame rate, COM-SUR captures a single image of the consolidated 'moment' of 'that' one second, when the I, P, and B frames come together. This method significantly reduces data size without sacrificing vital information. It goes without saying that when multiple cameras are displayed in a grid view, say 4x4, the storage size is further reduced since all the cameras are captured as a single image. Since no suggestion is being made to replace the actual video with images, COM-SUR acts as a wonderful supportive technology both to audit (review) just 86400 frames representing 24 hours and reducing the data size at the same time.

CHALLENGES FACED BY ART GALLERIES

1. Theft and art vandalism:

The risk of theft is a significant concern for art galleries. High-value artworks can be attractive targets for thieves. Vandalism, intentional or accidental, is also a threat, potentially damaging priceless pieces.

2. Security of fragile artwork:

Fragile or delicate artworks require specialized handling and protection. Ensuring the security of such pieces while allowing visitors to appreciate them poses a challenge.

3. Visitor misbehavior:

Visitors may inadvertently or intentionally mishandle artwork, leading to damage. Implementing measures to prevent touching or

unauthorized contact with pieces is crucial.

4. Fire and environmental hazards:

The risk of fire poses a threat to artwork, and environmental factors such as temperature and humidity fluctuations can lead to deterioration. Galleries need climate control systems and fire prevention measures.

5. Threats by activists or other individuals:

Art galleries often face the challenge of vandalism, graffiti, and other forms of defacement, sometimes carried out by activists or individuals with various motives. Vandalism can target both the artworks displayed within the gallery and the gallery's physical infrastructure. Activists may use art spaces as a platform to convey messages, express dissent, or draw attention to specific issues.

6. Cultural heritage protection:

Art galleries often house cultural heritage items that are of immense historical and cultural value. Protecting these items from theft or damage is a serious concern.

7. Unauthorized access:

Controlling access to restricted areas within the gallery is essential to prevent unauthorized entry and protect valuable artworks.

8. Public events security:

Hosting public events or openings increases footfalls, and security challenges may arise during such occasions. Managing crowd control and ensuring the safety of attendees are priorities.

9. Insider threats:

Art galleries have to deal with insider threats from disgruntled employees or even unwitting staff who fail to follow proper security measures.

10. Humongous growth of surveillance video:

The exponential growth of surveillance cameras has resulted in an unprecedented surge in surveillance video. Effectively managing this data has become a daunting challenge due to the massive storage capacity required, especially considering the prolonged retention periods necessary for security, incident investigation, or legal purposes. Furthermore, the prevalence of high-resolution video with increasing megapixels compounds the storage demands, making efficient data management an urgent priority for organizations grappling with the immense volume of surveillance footage.

USE OF VIDEO SURVEILLANCE AT ART GALLERIES

Most art galleries have video surveillance covering the following areas:

- Entrances and exits
- Reception and sales areas
- Exhibition spaces
- Special exhibitions and high-value areas
- Storage areas
- Art restoration and conservation areas
- Art handling and packing areas
- Staff workspaces

- Gallery cafes or lounges
- Outdoor areas and perimeters
- Parking areas

Further, the concerned stakeholders of art galleries generally need to review and analyse recorded CCTV video footage from time to time for tracking visitor behavior as well as investigating incidents and/or accidents, staff negligence etc., in order to corroborate evidence, as well as assisting Police/other Law Enforcement Agencies.

USE OF CAMERAS FOR ANALYSING ARTWORKS

Art galleries employ specific technologies and applications that utilize cameras for the analysis and study of artworks as follows:

1. High-resolution imaging:

High-resolution cameras are used to capture detailed images of artworks. These images can be crucial for art documentation, cataloguing, and conservation efforts. High-resolution imaging helps reveal intricate details, colors, and textures.

2. Infrared imaging:

Infrared cameras can capture images beyond the visible spectrum, revealing hidden details, underdrawings, and alterations in artworks. This non-invasive technique is valuable for art conservation and authentication.

3. Ultraviolet (UV) photography:

UV-sensitive cameras are employed to capture images under ultraviolet light. This technique is useful for identifying retouching, previous restorations, and other features not visible under normal lighting conditions.

4. Reflectance transformation Imaging (RTI):

RTI involves capturing a series of images of an artwork with varying lighting angles. These images are then processed to create an interactive digital representation, allowing researchers to analyze surface details and textures interactively.

5. Spectral imaging:

Spectral imaging involves capturing images at different wavelengths across the electromagnetic spectrum. This technique is useful for studying pigments, identifying materials, and understanding the chemical composition of artworks.

6. Multispectral imaging:

Multispectral cameras capture images at multiple wavelengths, providing information about different materials used in an artwork. This can be beneficial for art historians, conservators, and researchers.

7. 3D imaging:

Cameras, often in conjunction with laser scanners or structured light systems, are used to create three-dimensional models of artworks. 3D imaging helps analyze the surface geometry and dimensions of sculptures, reliefs, and other three-dimensional art.

8. Digital microscopy:

High-powered microscopes with digital imaging capabilities are used to examine artworks at a microscopic level. This is crucial for studying paint layers, identifying pigments, and assessing the condition of artworks.

9. Digital X-Radiography:

X-ray imaging, when digitized, allows art conservators to examine the internal structure of paintings, revealing hidden layers, repairs, and structural details without physically disrupting the artwork.

10. Time-of-Flight (ToF) Cameras:

ToF cameras measure the time it takes for light to travel to the surface and back, creating detailed depth maps of artworks. This can be useful for understanding the topography and relief of sculptures.

LIVE MONITORING – CHALLENGES

Some high-profile art galleries have a dedicated control room with operators, set up for live monitoring of CCTV cameras. However, live monitoring comes with its own set of challenges of video blindness, poor attention span, boredom, operator bias, false alerts, and so on.

Moreover, these cameras continuously capture and record humungous amounts of video data. It therefore becomes a daunting task for the operators to review and analyse this data whenever the need arises. Thus, it may be noted that benefits from video surveillance systems can accrue only when they are used optimally, suggestions for which are enumerated further on, in this document.

COMPLIANCE - GENERAL

Conformity or compliance in any organization means adherence to laws and/or rules and regulations, various standards, as well as data storage and security requirements as laid down by government bodies, governing bodies of the respective industry, or the management of the organization. When an organization complies with the requirements mandated by government and/or governing bodies, then it is termed as 'regulatory compliance' which enables the organization to run in a legal and safe manner.

COMPLIANCE - AUDITS

Several organizations carry out compliance audits on a regular basis to avoid the potential consequences of non-compliance.
A compliance audit examines how well an organization adheres to compliance requirements. Some organizations use video surveillance to monitor compliance issues and audit recorded CCTV video footage from time to time for investigating and preventing compliance issues. Auditing CCTV provides actionable insights on the level of compliance within the organization.

"CCTV IS NOT ENOUGH – WE MAKE IT WORK FOR YOU"

While it is not being suggested that optimal usage of video surveillance can cure all issues, several issues of the following kind can be addressed by doing just a little 'more' with respect to making the optimal use of video surveillance systems:

- Theft

- Violence and vandalism

- Accidents/causes of potential accidents

- Potential causes of fires

- Recces/suspicious movements /activities

- Insider job/security lapses

- Unauthorized/unlawful activities/visitors

- Visitors wearing suspicious/seasonally inappropriate clothing, for example heavy coats to conceal items

- Visitor behavior

- Visitor safety issues

- Violence and vandalism

- Intrusions, especially by animals

- Housekeeping issues

- Staff negligence

- Inattentive staff (e.g. guard sleeping)

- Unruly visitors/staff

- Issues with women staff/visitors

- Cameras/recorder malfunctions

So, what is the 'more' that needs to be done?

1) AUDIT CCTV VIDEO FOOTAGE DAILY AS A STANDARD OPERATING PROCEDURE

'Auditing' means 'seeing' what the cameras 'saw'. Auditing of CCTV footage should be done daily (continuous investigation) to identify potential issues and threats. Auditing is a dedicated and systematic process that helps address challenges related to live monitoring and alert-based systems. Auditing helps in evaluating analyzing incidents to improve existing policies, procedures, and processes.

Concerned personnel should be trained to become CCTV video footage auditors, and the audit teams should be rotated to avoid complacency/collusion. Daily auditing of CCTV footage can also help in adhering to the principles of Kaizen and TQM for business improvement.

2) DOCUMENT AUDIT FINDINGS/INCIDENTS

Audit findings/incidents should be documented in a standardized template to find the root cause to prevent future recurrences.
Historical data of such findings/incidents can reveal patterns that can help take better informed corrective and preventive action.
If all art galleries report incidents in a standardized template, relevant authorities can derive business intelligence from the data and take action for the collective benefit of all stakeholders of art galleries worldwide.

3) ENSURE DISASTER RECOVERY OF CCTV VIDEO FOOTAGE – LIKE A 'BLACKBOX'

CCTV video footage must be stored at multiple locations in order to ensure that even if the recorder is stolen, destroyed or tampered with the data is never lost. Further, any backed-up data must easily be searchable and retrievable; else, it is going to be a nightmare finding the relevant video.

4) DISPLAY DYNAMIC INFORMATION AT RELEVANT PLACES

Document and display details of information that is dynamic in nature in relevant areas.
For example:

1. List of authorized staff.

2. List of authorized security personnel deployed at the art gallery.

3. List of habitual offenders/suspects likely to visit the art gallery's premises (a 'Watch out' list).

5) USE A POWERFUL NEW SIGNAGE

"WE AUDIT CCTV VIDEO FOOTAGE EVERYDAY".

One size, one color, one powerful message. Across the nation.

DE-CENTRALIZED SURVEILLANCE + CENTRALIZED SURVEILLANCE = OPTIMAL RESULTS

Organizations with multiple locations struggle with centralized video surveillance due to infrastructure cost, internet bandwidth, and operator limitations. De-centralized surveillance offers higher accountability at each location and better situational awareness, leading to more chances of discovering exceptions.

NEW SKILL – 'CCTV VIDEO FOOTAGE AUDITOR'

In a groundbreaking move, the Ministry of Skill Development of India has established National Occupational Standards for the crucial skill of CCTV Video Footage Auditing. The Ministry of Education has also introduced a course to teach this skill to students in grades 11 and 12. This initiative will not only create new job opportunities and business ventures for those seeking a fresh career path but also for retirees from both the armed forces and the private sector. Additionally, this skill will help activate the millions of CCTV cameras currently underutilized, bringing them out of 'sleep mode' and enhancing their effectiveness.

CONCLUSION

"You see, but you do not observe"—a famous quote by Sherlock Holmes in A Scandal in Bohemia (1891, by Sir Arthur Conan Doyle)—perfectly illustrates the need for human insight in surveillance. While computers can 'see,' it is human observation that truly interprets and acts on what is seen. COM-SUR simplifies and enhances this critical process, leading to more effective and insightful results.

"Cameras don't lie"—but how will you know unless you 'see' what the cameras 'saw'? Don't wait for things to go wrong. Start auditing your CCTV footage with award-winning COM-SUR today.

In closing, we present three guiding principles that will revolutionize video surveillance:

1. Auditing is fundamental—everything else is peripheral.

2. Cameras have lenses—humans have eyes.

3. Let's make cameras 'accountable.'