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UTILITY VALUE OF COM-SUR™ FOR ENVIRONMENTAL MONITORING STATIONS

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 and other forms of video surveillance are common in environmental monitoring stations world over, 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/OTHER SURVEILLANCE VIDEO FOOTAGE AUDITING, SMART BACKUP, AND STANDARDIZED INTELLIGENT INCIDENT REPORTING SOFTWARE – THE MISSING PIECE OF CCTV/OTHER SURVEILLANCE VIDEO

COM-SUR is the world's only CCTV/other surveillance 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/other surveillance video 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/other surveillance 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 and other surveillance cameras in a standardized way, leading to better decision-making. It also offers exceptional investigative capabilities.

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 ENVIRONMENTAL MONITORING STATIONS

1. Theft and vandalism:

Environmental monitoring equipment, sensors, and data loggers are often valuable and can be targets for theft or vandalism. Perpetrators often conduct pre-operational surveillance of the target area, making it important to detect suspicious activity during this phase to prevent an incident.

2. Tampering with equipment:

Individuals may intentionally tamper with sensors or monitoring equipment, leading to inaccurate data readings.

3. Unauthorized access:

Environmental monitoring stations are often located in remote or unattended areas, making them susceptible to unauthorized access.

4. Wildlife Interference:

Wildlife, such as birds or animals, may interfere with equipment or sensors, leading to false readings or damage.

5. Occupational safety and health issues:

Environmental monitoring stations need to monitor the safety and health of workers within their premises, ensuring that they are following proper safety protocols and identifying potential hazards that may need to be addressed.

5. Compliance issues:

Environmental monitoring stations must comply with various regulations and standards related to environmental monitoring.

6. Insider threats:

Environmental monitoring stations have to deal with insider threats from disgruntled employees or even unwitting staff who fail to follow proper security and safety measures.

7. 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 ENVIRONMENTAL MONITORING STATIONS

Most environmental monitoring stations have video surveillance covering the following areas:

- Entry and exit points
- Equipment sheds and enclosures
- Weather stations and sensor installations
- Laboratories and data processing areas
- Meteorological towers and masts
- Communication towers and antennas
- Weather balloon launch zones
- Waste and hazardous material storage areas
- Critical infrastructure areas
- Parking areas

Further, officials of environmental monitoring stations generally need to review and analyse recorded CCTV video footage from time to time for investigating incidents and/or accidents, and other issues in order to corroborate evidence as well as assist Police/Law Enforcement Agencies.

USE OF VIDEO SURVEILLANCE FOR THE PURPOSE OF ENVIRONMENTAL MONITORING

Video surveillance is employed for environmental monitoring to enhance the understanding of ecological processes as well as assess environmental conditions. Here are several ways in which video surveillance is used for the purpose of environmental monitoring:

1. Wildlife monitoring:

Video cameras are strategically placed in natural habitats to observe and record wildlife behavior. This includes studying migration patterns, breeding activities, and the overall health of ecosystems. The footage helps researchers and conservationists gather valuable data without disturbing the animals.

2. Ecological studies and research:

Video cameras are used in ecological studies to monitor plant growth, vegetation dynamics, and changes in landscapes. Time-lapse videos can capture long-term trends and provide insights into environmental changes.

3. Weather and atmospheric monitoring:

Video surveillance is employed to monitor weather conditions and atmospheric phenomena. Cameras capture cloud formations, precipitation patterns, and other meteorological events, contributing to weather research and forecasting.

4. Air quality monitoring:

Video cameras, often equipped with sensors, are used to monitor air quality in urban areas. They capture visual evidence of air pollution, dust levels, and emission sources, providing additional context to air quality data.

5. Water quality assessment:

Underwater video surveillance is utilized to assess the quality of water bodies. Cameras record aquatic life, sedimentation, and changes in water clarity, contributing to water quality management efforts.

6. Monitoring environmental changes:

Video cameras are deployed to document changes in the environment, such as erosion, deforestation, or the impact of natural disasters. Continuous monitoring helps track alterations in landscapes over time.

DRONES

Drones are increasingly being used to monitor environmental monitoring stations for the following purposes:

1. Aerial surveys and inspections:

Drones can conduct aerial surveys of the entire environmental monitoring station or specific areas, providing a comprehensive view of the surroundings and the condition of equipment.

2. Equipment inspection:

Drones equipped with high-resolution cameras or sensors can inspect environmental monitoring equipment, such as sensors, data loggers, and other infrastructure. This helps identify issues or damage without the need for physical access.

3. Environmental sampling:

Drones can collect environmental samples, such as air or water samples, from specific locations. This is particularly useful in remote or hazardous areas where manual sampling may be challenging.

4. Vegetation monitoring:

Drones equipped with specialized sensors, such as multispectral or hyperspectral cameras, can monitor vegetation health around the monitoring station. This information is valuable for ecological studies and environmental impact assessments.

5. Emergency response:

In the event of an environmental incident or disaster, drones can quickly survey affected areas, assess the extent of damage, and provide real-time information for emergency response planning.

6. Wildlife monitoring:

Drones can be used to monitor wildlife around the environmental monitoring station without disturbing natural habitats. This is beneficial for studying biodiversity and animal behavior.

7. Security and surveillance:

Drones equipped with video cameras can be used for security and surveillance, monitoring the perimeter of the monitoring station and detecting any unauthorized access or suspicious activities.

8. Mapping and 3D modeling:

Drones can capture high-resolution imagery to create detailed maps and 3D models of the monitoring station and its surroundings. This aids in environmental planning and management.

9. Weather monitoring:

Drones equipped with meteorological sensors can collect real-time weather data, such as temperature, humidity, and wind speed, providing additional context to environmental monitoring data.

10. Infrastructure planning and maintenance:

Drones assist in planning and maintaining environmental monitoring infrastructure by providing visual inspections of structures, identifying maintenance needs, and assessing the condition of assets.

LIVE MONITORING – CHALLENGES

Several environmental monitoring stations have a dedicated control room with operators, set up for live monitoring of CCTV and drone 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 video footage from time to time for investigating and preventing compliance issues. Auditing video provides actionable insights on the level of compliance within the organization.

AI - HOW TO MAKE IT MORE EFFECTIVE

The solution to making AI more effective lies in continuous learning from real-world incidents through post-event auditing. COM-SUR provides exactly this capability, enabling 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, the accuracy of AI systems can be significantly improved, helping to reduce false alarms and enhance detection capabilities.

Auditing ensures that AI learns from what might have been missed in real-time, allowing it to adapt to the unique requirements of different environments. Whether it's improving facial recognition accuracy or refining anomaly detection, this continuous feedback loop makes AI smarter and more reliable over time.

However, it's essential to recognize that AI, like any automated technology, can only perform tasks it’s programmed for. It cannot account for every possible scenario or exception, leaving certain areas outside its programmed scope. This is why human intelligence and intervention

will always play a vital role in verifying and refining AI outcomes.

"CCTV AND OTHER FORMS OF VIDEO SURVEILLANCE ARE 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:

- Intrusions, especially by animals
- Vandalism
- Tampering of equipment
- Recces/suspicious movements/activities
- Staff negligence
- Insider job/security lapses
- Accidents/Causes of potential accidents
- Unauthorized/unlawful activities/visitors
- Inattentive staff (e.g. guard sleeping)
- Fraud/loss/corruption/theft
- Potentially hazardous material
- Compliance issues
- Housekeeping issues
- Issues with female staff
- Cameras/recorder malfunctions

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

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

'Auditing' means 'seeing' what the cameras 'saw'. Auditing of CCTV and other surveillance video 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 video footage auditors, and the audit teams should be rotated to avoid complacency/collusion. Daily auditing of CCTV and other surveillance video 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 environmental monitoring stations 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.

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

CCTV and other surveillance video footage must

be stored at multiple locations in order to ensure that even if the recorder/storage device 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 environmental monitoring station.

3. List of habitual offenders/suspects likely to visit the environmental monitoring station'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.

AI WHERE YOU NEED IT, HI ALL THE TIME – THE AUGMENTED INTELLIGENCE MANTRA

The true power of COM-SUR lies in its ability to seamlessly integrate AI and Human Intelligence (HI) into a cohesive, Augmented Intelligence system. With COM-SUR, AI can be leveraged when needed to enhance analysis and generate insights, while HI remains at the core of the system's operation, ensuring that the technology is always accessible, intuitive, and responsive to human needs. This balance between AI and HI is what defines Augmented Intelligence, making COM-SUR a revolutionary tool that elevates the entire surveillance industry.

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.'