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the missing piece of CCTV

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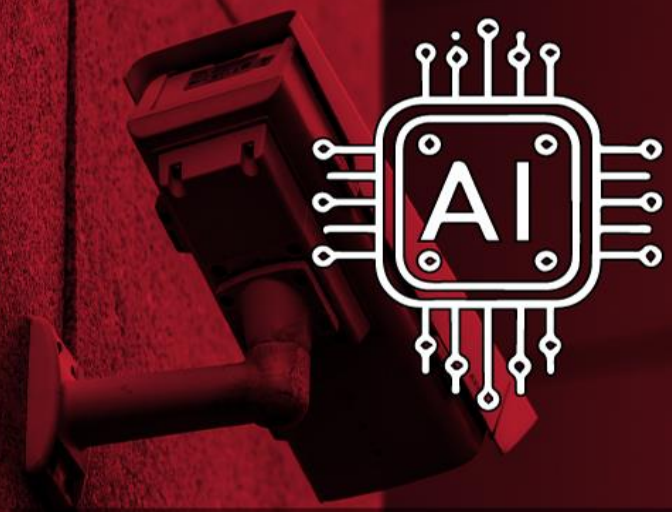
"SEE WHAT THE CAMERA SAW"

THE FOOTAGE WHISPERER



'BETTER' AI VIA DAILY AUDITS
NO MORE DATA WALL

100+ TOPICS - AIRPORTS TO ZOOS

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UTILITY VALUE OF COM-SUR™ FOR AQUACULTURE FACILITIES

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 commonly used in aquaculture (cultivation of various aquatic species, including fish, shellfish, crustaceans, and aquatic plants, to produce seafood for human consumption) but footage is often only reviewed reactively. Our company realized this problem early-on and has developed the world's only CCTV/other surveillance video footage auditing software that encourages daily auditing (hours in minutes) of 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/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/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.

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 AQUACULTURE FACILITIES

1. Unauthorized access:

Unauthorized access to aquaculture facilities poses a significant threat. Intruders may attempt to enter the facility to steal or sabotage aquatic stocks, equipment, or infrastructure.

2. Theft and vandalism:

Theft of aquatic stocks, equipment, or supplies, as well as vandalism, can lead to financial losses and operational disruptions.

3. Poaching and illegal fishing:

Aquaculture facilities in open water areas may be vulnerable to poaching and illegal fishing activities.

4. Biosecurity risks:

Disease outbreaks among aquatic stocks can have severe economic consequences for aquaculture operations.

5. Equipment failures:

Malfunctions or failures of aquaculture equipment, such as water pumps or aeration systems, can impact the health of aquatic stocks.

6. Cybersecurity threats:

With the increasing use of technology in aquaculture operations, there is a potential risk of cybersecurity threats.

7. Compliance issues:

Aquaculture facilities must comply with various regulations related to environmental protection, water quality, and operational practices.

8. Employee security:

Aquaculture facilities may be located in remote or challenging environments, and ensuring the well-being of workers involves addressing potential hazards and providing appropriate training.

9. Insider threats:

Aquaculture facilities have to deal with insider threats from disgruntled employees or even unwitting staff who fail to follow proper security and safety 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 AQUACULTURE FACILITIES

Most aquaculture facilities have video surveillance covering the following areas:

- Entry and exit points
- Ponds and tanks
- Feeding systems
- Nursery and hatchery areas
- Processing and harvesting areas
- Quarantine and treatment facilities
- Critical infrastructure areas
- Control rooms
- Storage and equipment areas
- Employee and worker areas
- Cage and net systems (applicable in case of offshore aquaculture facilities)

Further, the concerned stakeholders of aquaculture facilities generally need to review and analyse recorded CCTV video footage from

time to time for investigating incidents and/or accidents, staff negligence etc., in order to corroborate evidence, as well as assisting Police/other Law Enforcement Agencies.

USE OF UNDERWATER CAMERAS AT AQUACULTURE FACILITIES

Underwater cameras play a crucial role in aquaculture facilities by providing real-time monitoring and observation of aquatic stocks, ensuring their health, behavior, and overall well-being. Here's how underwater cameras are typically used in aquaculture:

1. Fish behavior monitoring:

Underwater cameras are strategically placed in aquaculture ponds, tanks, or cages to observe and monitor the behavior of fish or other aquatic species. This includes swimming patterns, feeding activities, and interactions among the stocks.

2. Health assessment:

Underwater cameras allow for close-up observation of the health of aquatic stocks. Operators can detect signs of diseases, abnormalities, or stress-related behaviors, enabling early intervention and disease management.

3. Feeding management:

Integrated with feeding systems, underwater cameras monitor the distribution of feed to the fish. Operators can assess feeding behavior, ensure proper feeding practices, and identify any malfunctions in the automated feeding equipment.

4. Environmental conditions:

Underwater cameras are used to monitor and assess environmental conditions within aquaculture facilities. This includes water quality parameters such as clarity, temperature, and dissolved oxygen levels, which are crucial for the health of aquatic stocks.

5. Growth and size monitoring:

Continuous monitoring of fish growth and size is facilitated by underwater cameras. This information is valuable for assessing the effectiveness of feeding practices, determining market readiness, and optimizing harvest times.

6. Breeding and reproductive behavior:

Underwater cameras in hatchery or breeding areas allow for the observation of reproductive behaviors, egg laying, and hatching processes. This is essential for managing breeding programs and ensuring successful reproduction.

7. Biosecurity monitoring:

Underwater cameras contribute to biosecurity efforts by enabling the observation of fish health without physical contact. This minimizes the risk of introducing diseases or stress factors to aquatic stocks.

8. Quality control:

Underwater cameras assist in quality control measures by providing visual confirmation of the condition and quality of fish stocks. This is particularly important in processing and

harvesting areas.

9. Security and prevention of predation:

Underwater cameras help in monitoring and preventing predation events. It allows operators to detect potential threats from predators and take preventive measures to safeguard the aquatic stocks.

10. Environmental impact assessment:

Underwater cameras are used to assess the environmental impact of aquaculture operations. Monitoring activities such as waste dispersion and sedimentation can help ensure sustainable and responsible practices.

11. Research and data collection:

Underwater cameras contribute to research efforts by providing visual data for studying fish behavior, responses to environmental conditions, and the impact of various factors on aquaculture productivity.

USE OF DRONES AT AQUACULTURE FACILITIES

Drones, or Unmanned Aerial Vehicles (UAVs), are increasingly being utilized in aquaculture facilities to enhance various aspects of operations, monitoring, and management. Here are some ways in which drones are commonly used in aquaculture:

1. Aerial surveillance:

Drones equipped with cameras provide aerial surveillance of aquaculture facilities, offering a bird's-eye view of ponds, tanks, and infrastructure. This aids in monitoring the overall layout and identifying potential issues or irregularities.

2. Environmental monitoring:

Drones equipped with sensors can monitor environmental conditions such as water quality, temperature, and turbidity. This allows for efficient and comprehensive data collection across large areas.

3. Stock assessment:

Drones are used to conduct stock assessments by capturing aerial imagery of aquaculture ponds or cages. This information helps estimate the size, density, and health of aquatic stocks, facilitating better management decisions.

4. Feeding management:

Drones assist in feeding management by monitoring the distribution of feed across aquaculture ponds. Aerial views help assess feeding patterns, identify areas with excess or insufficient feed, and optimize feeding practices.

5. Infrastructure inspection:

Drones are deployed for infrastructure inspections, including the assessment of dams, nets, and other facilities. Aerial inspections provide a quick and efficient way to identify structural issues and plan maintenance activities.

6. Pond or cage health monitoring:

Aerial imagery captured by drones helps monitor the health of ponds or cages. This includes identifying areas with water

stagnation, algal blooms, or other issues that may impact the well-being of aquatic stocks.

7. Emergency response:

In the event of emergencies, such as disease outbreaks or environmental incidents, drones can be quickly deployed to assess the situation. Aerial surveys aid in rapid response planning and decision-making.

8. Biosecurity surveillance:

Drones contribute to biosecurity efforts by monitoring and preventing unauthorized access to aquaculture facilities. They can quickly detect potential threats, such as wildlife or human intrusion.

9. Water sampling:

Drones equipped with specialized devices can collect water samples from specific locations within aquaculture ponds. This is particularly useful for water quality testing and analysis.

10. Mapping and GIS applications:

Drones assist in mapping the layout of aquaculture facilities and creating detailed Geographic Information System (GIS) maps. This information is valuable for planning, resource allocation, and facility design.

11. Research and data collection:

Drones support research efforts by capturing aerial data for studies on water dynamics, habitat mapping, and environmental impact assessments related to aquaculture activities.

12. Education and outreach:

Drones can be used for educational purposes and outreach by capturing aerial footage of aquaculture operations. This engaging content can be shared with the public, students, or stakeholders to raise awareness about aquaculture practices.

LIVE MONITORING – CHALLENGES

In some cases, there is a dedicated control room with operators, set up for live monitoring of 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.

"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:

- Behavior of aquatic animals

- Health of aquatic animals

- Biosecurity risks

- Intrusions, especially by animals

- Vandalism

- Tampering of equipment

- Compliance issues

- Worker health and safety issues

- Issues due to climate change

- 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

- Recces/suspicious movements/activities

- Potentially hazardous material

- Issues with female staff

- Cameras/recorder malfunctions

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

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

'Auditing' means 'seeing' what the cameras 'saw'. Auditing of 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 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 stakeholders of all aquaculture facilities report incidents in a standardized template, relevant authorities can derive business intelligence from the data and take action for the collective benefit of all aquaculture facilities worldwide.

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

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 aquaculture facility.

3. List of habitual offenders/suspects likely to visit the aquaculture facility (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.

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.'