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Healthcare: **SENTURIAN HEALTHCARE AI**

Falls are currently the second leading cause of unintentional injury deaths worldwide. With an ever-increasing elderly population and fewer people entering the healthcare profession, the worldwide community urgently needs to find ways to address this issue and ensure a better quality of life for our elderly as they age gracefully and independently.

Senturian Solutions aims to contribute to global society with innovative image technology that solves real problems within the healthcare industry. The fall down detection is ideal for hospitals, nursing homes, retirement homes, and elders living alone. By adopting Senturian Healthcare AI, it can help save lives across the globe by reducing reaction time. Seamlessly integrated into XProtect, this highly accurate fall-down detection solution is the first solution in the world to combine video and sound analytics with privacy masking.

Senturian Healthcare AI

Implemented in facilities in Asia Pacific, Senturian Healthcare AI is designed to help nursing staff quickly respond whenever a patient falls. This intelligent video analytics solution is based on Artificial Intelligence with Deep Learning and can work with most existing security cameras, allowing you to repurpose your existing investments. This means you can transform your existing video solution into a full-blown analytic system that can not only monitor but also help improve business operations and processes. This powerful, prompt real-time analytic collects various data for smarter decision-making. It can be used to automate routine tasks, reducing the need for constant monitoring.

For a holistic healthcare solution, by also adopting Senturian's Data Library Optical Character Recognition in the healthcare industry, it can also keep track of high-value hospital inventories and help in optimizing the procurement process while reducing surface contact with optical hardware devices. Pairing this with Senturian's advanced facial recognition (With mask on/mask off detection) to manage sensitive authorized/unauthorized entry points like maternity wards / operating rooms and Data Library Object Analytics to track human and objects including vehicle's make/model/ license plates, the healthcare institution is able to use these advanced analytical technology to improve efficiency and keep its patients and staff safe.

Changing populations

The World Health Organization (WHO) predicts that the global elderly population (ages 65 and over) will double in size by 2050—from 728 million today to 1.5 billion people. At the World Health Assembly in 2016, 194 countries agreed that long-term care systems are required to meet the needs of this growing population. With our increasing elderly population, fewer births, and fewer people entering the nursing and social services professions, the worldwide community urgently needs to address these issues which can be overcome through technology like Senturian advanced image and sound analytics.

Impact of falls

Each year an estimated 684,000 people die from falling. By automating certain healthcare functions, Senturian Healthcare AI helps increase operational efficiency within healthcare institutions. It allows healthcare staff to quickly detect and respond to falls and incidents that require immediate attention. This helps staff keep informed so they can effectively respond to incidents for instance if someone falls, cries for help, or if a wheelchair patient is inactive for a certain time. Notably, quick response time can often make the difference between death, permanent disability, or saving a life.

Issues with existing solutions

Current fall detection solutions can be broadly grouped as wearable devices and environmental sensors. However, each of the devices has its limitations. Due to fluctuations in temperature and humidity, sensors need frequent calibrations. When it comes to wearable devices, some people find them uncomfortable to wear, and often forget to put them on or replace the batteries. The above devices are most probably adopted by individuals whose movements are challenged and who have a requirement for them but notwithstanding that, it's still possible for healthy active elders with no monitoring devices to accidentally fall. To address these issues, Senturian Healthcare AI is designed to complement or replace such devices. This one-of-a-kind solution eliminates the need for costly 24-hour monitoring, helping save you time and money.



Combining Image Analysis and Sound/Speech Analysis

Senturian Healthcare AI can both see and hear.

This robust life-saving system pulls video streams directly from Milestone and using image analytics, artificial intelligence (AI), and sound analytics, it analyzes the video and triggers events through the Milestone platform. It has two levels of detection—the first level uses AI to analyze security camera footage and identify patients who fall. This is adequate in most cases, however, to further improve safety with even higher degree of accuracy and redundancy, sound analytics and speech recognition is used to complement video imaging analytics. Using sound/speech analytics, this second level can detect if a person screams or cries for help. Senturian Healthcare AI can detect those incidents instantaneously and sends alarm notifications to the nurse call system so that health care workers can respond and attend to the patient immediately.

Privacy is always protected

Senturian Healthcare AI monitors elderly people in a non-invasive manner. Thanks to privacy masking this solution ensures privacy is always respected. Perfect for healthcare industries, it can detect incidents without revealing personal details of the people in the image by offering silhouette masking technology. Hence movement of masked people are displayed as silhouettes. What this means is elderly residents and patients can have privacy protection and monitoring at the same time.

By working closely with global partners to develop this solution, Senturian Healthcare AI is bundled with Canon's Moving Object Mask plug-in for Milestone XProtect to hide all the details. If an incident occurs, it's possible to remove these privacy restrictions allowing the image to be viewed without masking. Furthermore, depending on local jurisdictions, to avoid issues with privacy legislation, unrecorded audio is an option that can be considered. In Singapore, residents are however required to complete a Personal Data Protection Act (PDPA) form to allow hospitals to release relevant medical information to facilitate their care.

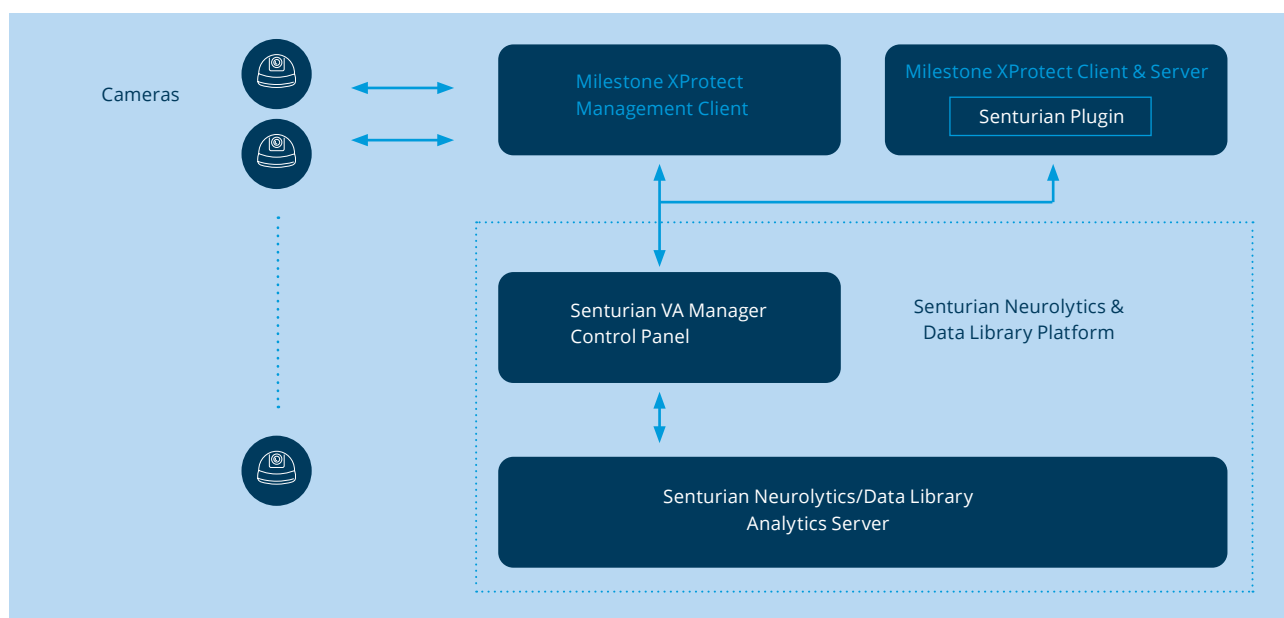
Accurate with lower false alarms

Acting like an accurate pair of eyes, this highly accurate fall detection solution uses AI to determine whether a person is kneeling, sitting on the floor, tying their shoelace, or indeed falling with low rate of false positives. It can tell the difference between someone sitting down, and someone falling from a seated position. So, if the person is simply squatting down, no alarm will appear. This eliminates the impacts of human fatigue and error and allows caregivers to provide medical assistance or notify the appropriate emergency services if necessary. Plus, it eliminates situations where patients are left unattended for long periods when they need help. As a result, healthcare workers have more time to engage with their patients and attend to their other specific care and support needs.

How does it work?

Senturian's Behaviour Detection; also known as Neurolytics are used to perform behavioral analytics mainly focusing on human falls, violence detection, and sound analytics and is fully integrated inside Milestone XProtect. Running on Intel CPUs, it pulls video streams directly from Milestone XProtect, analyzes them, and triggers different events through the Milestone platform. With full Smart Client integration, fall detection alarms pop up automatically within the XProtect alarm manager, and the camera

automatically zooms in allowing for visual verification. This fully integrated, cost-effective, plug-and-play solution empowers healthcare personnel with the tools and information they need to respond to incidents confidently. Furthermore, because Senturian Solutions and Milestone offer an open environment with integration out-of-the-box, you have access to a wide range of powerful analytics to make your system even smarter and ensure every solution is tailor-made to specific requirements.



Beyond Healthcare

Other than applications within the healthcare industry, Senturian's suite of analytics can also be used in other industry verticals and various deployments. Sound analytics is also able to detect abnormal sounds such as vehicles colliding, breaking glass, gun shots and explosions up to 50m away. Using Neurolytic's behavior pattern analytics, this smart solution is deployed to detect violence by identifying fighting and violent behavior.

The Data Library object analytics can detect various object attributes (55 at present) including Fire, Smoke, Humans, Vehicles, Animals and human accessories like Handphones / Backpack / Helmets / etc according to different colors. Furthermore, the Data Library analytics can be used to detect directional alarms for traffic controls, proximity detection for use in social distancing, people / vehicle counting with standard reporting and much more. In fact, through smart machine learning, Senturian Solution is also able to customize its analytics to fit specific requirements.



Availability and support.

Senturian Healthcare AI is globally available through local distributors or directly from Senturian Solutions. The solution can also be customized to suit specific requirements. Get in touch with Senturian Solutions today to book a demo or hear more about this intelligent healthcare solution.



About Senturian Solutions

Based in Singapore, Senturian specializes in Deep Tech image vision and sound analytics by analyzing sounds, human behaviors, identify object and facial recognition through live processing sound and video analytics platform and apply machine learning with multiple logic processing capabilities to transform data into meaningful information. Represented through local distribution partners in over 30 countries worldwide, Senturian's AI technologies are seamlessly integrated with Milestone XProtect and are currently being deployed in many projects and use cases over the globe.