Patents Show Tech Horizon

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First Published in Security Magazine September 12, 2006

Millions of dollars have been invested into security technology in the last five years. A recent perusal of the "pre-grant" patent abstracts from the U.S. Patent and Trademark Office shows that some of the creative minds involved in this research and development are working overtime.

BLACK-LIGHTING URINE SAMPLES

An employee's next urine sample may have to glow under a black-light to pass a drug test. Patent number 20060057728 has been filed for a process preventing adulteration or substitution of urine samples by adding randomization to the collection and routing of specimens. Under this process the test-taker is required to ingest either a fluorescent chemical marker such as riboflavin, p-amino benzoic acid, and/or compounds containing non-radioactive isotopes detectible in a urine sample, or a chemically inert placebo.

The nature of the ingested material is closely guarded and randomized before packaging the sample. Barcodes, invisible coding, or RFID tags ensure that only the laboratory technicians are aware of what was ingested by the test-taker, and what color, if any, the urine should fluoresce when it is exposed to UV light. Further randomization may be achieved by having the test-taker ingest combinations of chemical markers.

The patent claims that it substantially prevents the substitution of specimens by preventing the test-taker and unauthorized personnel -- people who may collect and route the specimens -- from knowing whether the specimen is expected to fluoresce or not.

INVISIBLE BLACK-LIGHT PAINT

A patent has also been filed for invisible (clear) aerosol paint. Patent number 20030227004 claims to be completely invisible to the naked eye under ordinary conditions, but will fluoresce when exposed to UV light wavelengths, or black-light. The interesting thing about this material is that, even after it is applied and fully dried, it is virtually invisible and easily removed using ordinary detergent and water.

The paint can be used as a temporary marker for tools and materials belonging to a specific owner. Tools

and materials leaving a job-site would be exposed to black-light to authenticate ownership. This would prevent intended or unintended exchanges of material goods. The material can safely be applied to rough and uneven surfaces, interior wall surfaces, clothing, and even skin surfaces without causing permanent staining. The spray is an excellent material for highlighting three-dimensional objects. The industrial safety and security industries will find many uses for this material.

FUZZY LOGIC INTELLIGENT CAMERA SYSTEM

The watch is watching -- This tiny portable TV uses innovative technology including a sharp TFT LCD display screen, built in Sony TV tuner and accompanying stereo earphones which function as the TV's antenna. Is this the ultimate security monitor?

High tech camera systems are poised to improve exponentially in the near future. A patent is currently filed for an intelligent camera security monitoring system that employs fuzzy logic analyses and an information reporting system. The system collects and analyses data and information obtained from the camera view and sends these images to a central controller. The fuzzy logic processor within the central controller receives and stores these observations, and then has the computer analyze facial expressions, voice inflections, lip reading movement, emotions, body movement, patterns and stress analysis to determine whether a person, crowd, animal, action, activity or "thing" poses a potential threat and warrants a response. The invention is said to recognize possible terrorists, criminals, enraged or dangerous persons, and can also identify a person's level of intoxication or impairment by alcohol or drugs though a proprietary "Visual Response Measure."

The patent (US Patent number 20060028556) says that it can use wired or wireless communications in short bursts or stay in constant contact with security systems or personnel. It can alert security personnel to potential threats by communicating computer analysis results, video images and alerts, to stationary or mobile systems, portable computers, as well as hand-held devices like Palm-Pilots, Blackberries, and/or RF radios and cellular telephones. As a tool, the patent claims it can improve the capability of security personnel to detect and understand potential security threats and allow them to initiate the appropriate response and action, thereby keeping people, animals, places and things safe and secure.

The system is programmable for any language and has the hardware and software to convert what is visually observed into understandable text, graphic, or computer speech, information that can be machine readable and/or understood by humans.

INTELLIGENT EVENT DETERMINATION, NOTIFICATION

Within the same intelligent camera systems category is Patent number 20050271250, an intelligent system that helps determine events, analyses the potential severity of the events, and automatically notifies security personnel. This high-tech camera system is said to be able to distinguish between "significant" and "insignificant" events. The patent abstract claims that this system can analyze event and object attributes and determine if the potential event warrants an action alarm.

Event attributes leading to an alarm may include location and type of potential event. Object attributes include an identification of an object and attributes associated with the identified object. For instance, if this system where set-up in a gun shop the mere presence of guns (object attribute) would not trigger an alarm. But the handling of a firearm may preset the system to watch for the chambering of a round (event attribute) and sound an alarm if the event occurs.

Another scenario may include a passenger carrying (event attribute) a package (object attribute) into an airport terminal. The system would be programmed so as not to recognize this as a significant event. However, the same package (object attribute) left unattended in a crowded waiting area (event attribute) would sound an alarm.

Objects and events recorded by the security camera are compared against information stored in a database. The recognition module that identifies an object or event determines whether or not to alert security personal.

HIGH-TECH SECURITY FENCING

A accurately locate a potential breach. A fiber optic cable weaved into the fence sends a signal to a monitoring system whenever the cable is broken, bent, or has stress applied.

The monitor has an indexed look-up table that immediately informs the security personal where the breach occurs.

WEARABLE SECURITY APPARATUS

here's a lot of interest in wearable security apparatus. Patent 20050223464 describes a new three-layered luminescent vest that emits light through woven plastic fiber optic thread.

Intelligent event determination and notification will routinely be built into security video systems with software automatically alerting to what it sees in images.

The layered weave is positioned at various places on the vest (e.g., sleeves, back panel, left and/or right front panel) and covered with a transparent plastic film through which letters or patterns formed by the fiber optic threads will show. The vest can be made to blink different colors for color-coded alarms.

The inventor claims that it can be seen farther than the reflective materials currently in use, and that it is less expensive to manufacture and more reliable that current L.E.D. technology.

Also under apparel is patent 20050068171, a security vest that the inventors equate with a personal bodyguard. This vest integrates optical and acoustic sensors, cellular telephone, GPS system, and a decision engine processor with user feedback input. The sensors send input signals to the decision engine, which selectively assesses the environment and events for potential threats and communicates any potential danger to the wearer.

The decision engine can determine events and objects from the data sent by the sensors, and an inference engine associates events and behaviors.

For instance, sentry guards may wear the vest to prevent surprise attack from the rear. As soon as a guard is assaulted, the vest would signal the guard's heart and respiration rate (part of the guard's fight or flight response) and report the guard's position via the GPS to a central location.

According to the inventors, the vest could be armed with different types of sensors and programmed to recognize any type of threat. A vest fitted with chemical sensors could warn when a "date rape drug" was surreptitiously slipped into the wear's drink. Or, the vest could also be fitted with cameras and a processor programmed to identify and warn the wearer when stalkers or subjects of restraining orders come within camera view.

Does this sound futuristic? It does, but the future is now. All of these patents are now -- or soon will be -- part of the security industry; and, as the threat to our society increases, so too will the advances in security technology.

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