The **thriving market** of intelligent video surveillance

Surveillance cameras are becoming an ever-greater part of our everyday lives. Professor **Robert Laganière** of the School of Electrical Engineering and Computer Science works with the industry to develop surprisingly intelligent monitoring systems.

by Martine Batanian

An alarm warning you that a thief has entered your home appears on your cell phone while you're at work. While travelling, worried about your home, you access a confidential website to view video images of it. As you are driving your car, the camera that is tracking the road promptly alerts you when it perceives that you are swerving out of your lane. Science fiction? Not at all. Rather, these are some of the research projects Robert Laganière is working on, in collaboration with various Ottawa companies.

"Let's stop recording everything all the time. Let's have smarter cameras that ignore the commonplace, focusing instead on detecting and recording unusual situations," advocates professor Laganière, who has had a special interest in image processing and computer vision for the past twenty years or so. Fascinated by the complexity of the visual process and curious to impart that capability to a machine, Laganière has focused on intelligent video surveillance, a system not only capable of interpreting the videos it records and of generating an alarm when required, but also of recording only the information that is of interest to the user.

In 2006, an opportunity arose for Laganière to apply his research when he met the business partner with whom he founded the company Visual Cortek. Working with a staff of four students from the University, his vision then

went from prototype to commercial product. At that time, the Ontario Centres of Excellence (OCE) and the Technology Transfer and Business Enterprise (TTBE) office at uOttawa allowed him to get familiar with marketing the product. "In 2009, Visual Cortek merged with Ottawa-based company Telewatch; we had an excellent intelligent video surveillance technology, and they had traditional expertise in corporate video surveillance. Together, we created iWatchLife."

The advantage of the iWatchLife product, which was officially launched in mid-May, is that it is extremely easy and affordable to use. No need for installers, wiring or having the computer perpetually on. All the user needs is a simple web or IP camera connected to the Internet. "iWatchLife is truly a cutting-edge technology because instead of saving videos on a specific computer, it stores them on the Internet using the cloud-based model that we already use for photos and other digital documents," explains professor Laganière, who now holds the title of Chief Scientist at iWatchLife. "That means we can view stored events from any computer, cell phone or tablet." In addition, users can select very specific elements to monitor, for example by drawing an intrusion zone around the front door of their home or cottage, or around their pool. They will then be notified if there is any movement within the specified zone. Robert Laganière's team is currently trying to push technology even further by integrating an automatic learning process into their product. That way, rather than setting parameters so the system knows what to watch and report, clients will be able to gradually teach the system what information it should look for.

Since starting to work on marketing the product, Robert Laganière has nearly doubled the size of his research team. The team's current projects include working with the company CogniVue on the development of support algorithms to make driving safer, with S5 Systems on a vehicle recognition system, and with Solink on a defrauder identification system for ATMs. While some are concerned about the pervasiveness of cameras in our environment, professor Laganière feels that when they are used properly, these technologies can have very positive

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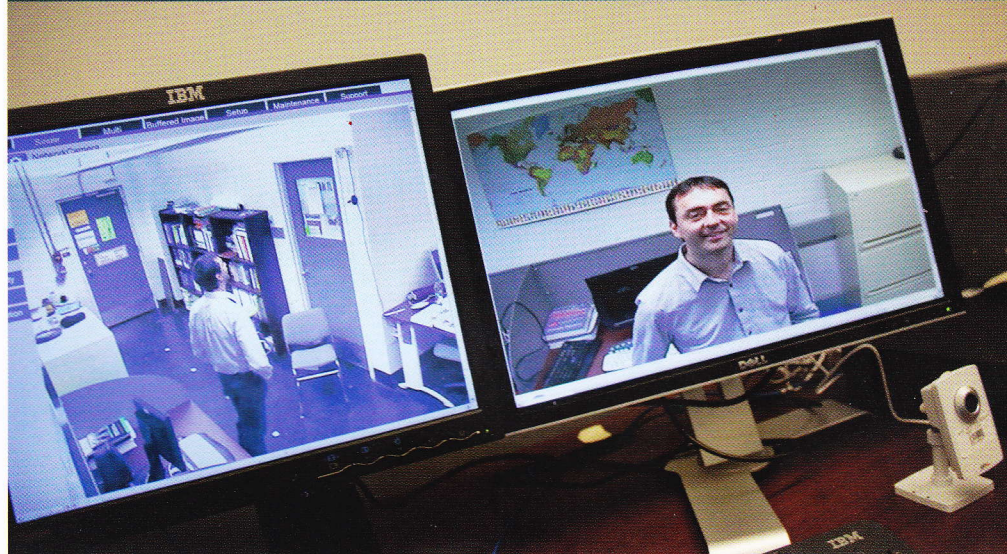
applications. "If installing a camera in your elderly parents' home allows you to make sure they are going about their everyday activities safely and capably, thus letting them stay in their own home longer, all the better. If a camera helps us view the road sign you just passed as you were driving, why not take advantage of that?"

Joining forces with other companies is an excellent way to identify actual needs on the field and to direct research towards the sectors where industry is still seeking computer solutions. "These collaborations also allow our lab to financially support research in the field of digital imaging algorithms at uOttawa, and to recruit skilled researchers among graduate students, research assistants and postdoctoral researchers," adds Laganière. "As for the companies themselves, their association with the academic community is a shrewd way to recruit highly qualified employees. We went from four employees at Visual Cortek to a team of about a dozen engineers and software developers at iWatchLife, and most of them are former students of mine." RP