Software Makes Modernization Achievable

By Christopher Perry and Kevin Woznicki

THE CONTINUING GROWTH OF CITIES IS ESCALATING THE NEED for mobility in urban areas, and heavy vehicle traffic calls for smarter parking and mobility systems. To address this, cities are being outfitted with cameras for multiple uses, such as closed-circuit television (CCTV) security, license plate recognition (LPR)-based parking enforcement, frictionless parking, smart traffic management, road tolling, and access control. The camera infrastructure is already in place, and now the need is shifting toward hardware and platform-independent analytics, data collection, and parking management systems based on LPR and other vehicle identification technologies.

There are multiple reasons for upgrading traffic and parking services with the use of smart software. Software solutions provide a cost-effective alternative to make use of existing hardware with added benefits that include complete scalability and full interoperability with other systems. When software is the backbone of these platforms, the development and deployment of video analytics, data collection systems, and business intelligence systems is accelerated and at significantly less cost. Moreover, the underlying neural network technology allows a virtually endless number of uses for software-based video analytics and LPR technology.

Typical Implementation
Let us review an example for a typical implementation. It is common practice for a parking management company to
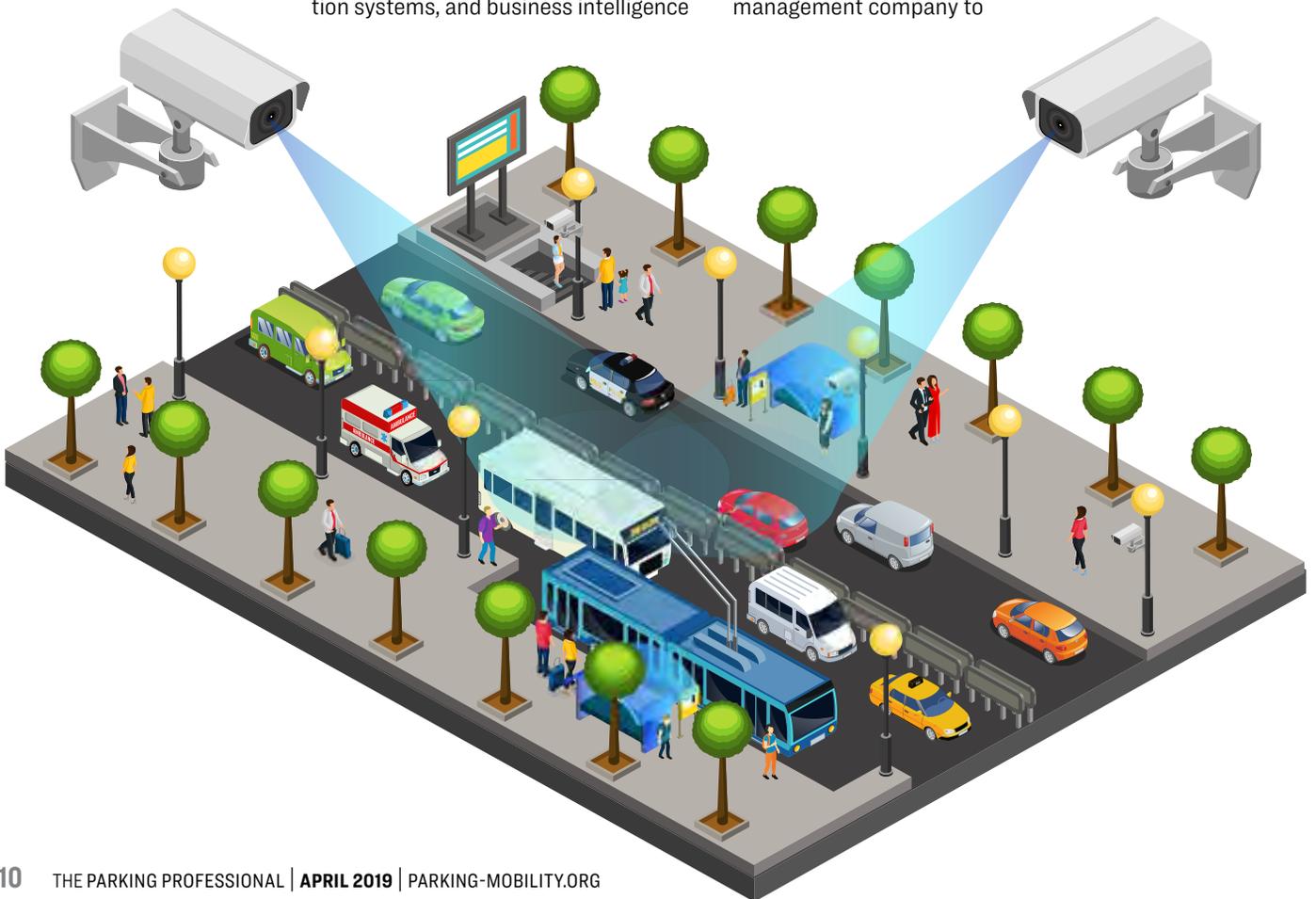
operate CCTV systems within garages, using a software suite to manage the access and revenue control aspects of the facility. Cameras are used to monitor entry and exit lanes; they can also be used to provide footage of the license plates and vehicles. To automate the entry and exit process, implementing LPR technology is a plausible choice. Unfortunately, adding LPR-specific cameras is often cost prohibitive.

The ideal solution is integrating LPR software into the parking software that works with all the existing infrastructure, including cameras and the barrier. Because a camera provides video footage of traffic, the setup allows additional analytical software to provide LPR data as well as other options (make and model recognition, for example). This additional information has many uses. While it is an interesting source of additional data in a shopping mall when trying to get a picture of the audience, it can also be used as a supplement for LPR data. By supplementing LPR data with vehicle make and model, the vehicle fingerprint becomes more accurate and decreases the margin of error for entry/exit decisions.

The benefits? Quick deployment, easy setup, a modernized operation, and additional data for the cost of the software instead of an expensive investment in new infrastructure.

Traffic Management

Video analytics technology applied in the case of vehicle brand and model recognition has uses in the traffic management sector as well. Starting from vehicle counting through traffic-incident detection to creating reference data for law enforcement, it covers several relevant functions while using existing surveillance equipment. Sweeping crowded road sections for traffic jams and immediately signaling the traffic management system to propose alternate routes or automated monitoring of dangerous crossroads 24/7 for traffic rule violations are all ready to be implemented.

When traffic analytic solutions are paired with law-enforcement systems, the result is a more encompassing and efficient solution that can offer multiple green benefits. There is no magic here: A video analytics system is capable of using existing camera infrastructure to provide authorities with all relevant reference data pertaining to traffic violations, traffic patterns, and traffic volume, thereby increasing the overall utility of the system.

These are only a few of the scenarios that can potentially be covered by video analytics software. We are still very early in the implementation of artificial intelligence-powered video analytics software into actual parking and traffic applications, but one thing is certain: Technology exists that has the potential to greatly accelerate the automation of parking and mobility systems and smartening of our cities. ℗

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