

## Automatic License Plate Recognition

by Kevin Gordon

The various forms of Automatic License Plate Reading (ALPR) technology are also called License Plate Recognition (LPR), Automatic Number Plate Recognition (ANPR), Automatic Vehicle Identification (AVI), and to a lesser degree Car Plate Recognition (CPR) and Car Plate Reader (CPR). While the technology has been around since the early-1990s, it is safe to say that ALPR is still an emerging technology.

In the futuristic police movie, *Robocop*, the vehicle license plates were bar coded and were easily scanned at a distance. ALPR isn't a bar code but it is an amazing technology that is benefiting law enforcement across the world. While used in many countries including the United States, Canada and Australia, the United Kingdom unarguably leads the way in ALPR use. The catalyst for the ALPR development was an attack by the IRA in the United Kingdom.

When you scan a text document into your computer it uses Optical Character Recognition (OCR) software, which scans the pixels. The OCR software determines if it could be a letter and replaces the pixels with the American Standard Code for Information Interchange (ASC-II ). While obviously a simplistic explanation, a car passes the camera that is linked to a computer and uses OCR to read the plate. The software then checks it against source databases and if a match is located, an alert is sounded.

ALPR does not replace officers or their skills of observation, but it does permit the checking of large volumes of traffic. It is used for what are referred to as Primary applications and Secondary applications. Primary applications are activities such as using intelligence to locate known suspects and vehicles, border traffic concerns, drug interdiction, and security at vulnerable areas such as ports. In other words, the reasons most officers think of when considering ALPR. Secondary applications include more administrative type incidents such as increased vehicle revenue, toll road evasion, etc.

ALPR utilized on a major highway can be used to scan for Amber Alert vehicles, stolen vehicles, wanted vehicles or other special interest vehicles. Beneficial uses at border crossings are obvious in the fight against terrorism.

In both the public and private field, they can be used at access control points. In this example, the data could contain the plates of all authorized vehicles, allowing only authorized vehicles entrance. The systems is also used at parking garages where it can read the plate on entry, read it again when leaving, and then determine how much the parking fee is. Exit is only granted after depositing the money or billed directly if a monthly pass, etc. The extent of use is determined by the extent of the database.

During its development, the software had to overcome many issues such as poor image resolution, blurry images, poor lighting, something over the plate, a hard to read font, etc. Infrared light is used so no auxiliary illumination is needed. It produces good images in bright sunlight, darkness or approaching headlights.

Sometimes the technical problems are easier to overcome than the society concerns. A monitor attached to an interstate overhead for example, scanning all plates, is considered a mass surveillance method that is by definition, the surveillance of an entire population or fraction thereof. On the other side of the argument, since the government issues the registration plate and as we all know, driving is a privilege, not a right, it can be argued the issue doesn't exist.

Another hurdle is the variety of American plates. Most veterans can remember the days before vanity plates and each state had one style of registration plate with small variations for different class vehicles. The software has to be more sophisticated because of these differences. That isn't the case in most countries, such as the United Kingdom. There, all plates are controlled by the Driver Vehicle Licensing Authority (DVLA), which is responsible for the issuing of all new registration numbers.

The plate numbers are issued by the government but not the plates. A new car dealer applies to the DVLA and is given a list of available numbers. The plates are actually provided by the car dealerships, made to specs as set by the government. The plates issued with a new car stay with that car until it hits the junk heap; they don't change with ownership.

The only exception in the United Kingdom is personalized or vanity plates. The DVLA sells those to the highest bidder. When that owner sells his car, he retains the vanity plate and the vehicle reverts to the original number allocated when the car was first sold. U.K. drivers pay a vehicle excise license tax not unlike our annual registration fee. Proof of that paid fee is stored in a little disk displayed in the front windshield of the vehicle.

Captia Symonds (SymondsNA in North America) is one of the providers of ALPR systems. Symonds helped develop the U.K. ALPR national standards and provided strategic vision and solutions. In June 2005, Colin Coxal, Strategic Security Officer for Capita Symonds Ltd., appeared before a U.S. House subcommittee on administration.

Coxal testified that "prevention is a better cure is central to the approach the U.K. government and its agencies took when dealing with the threat to London and consequently the wider U.K. economy." Symonds ALPR system can read three thousand plates each hour at vehicle speeds of up to 130 mph. Since the system operates 24/7/365, it is a cost-effective management tool.

SymondsNA is part of the Capita Symonds Group, the United Kingdom's leading professional and support service organization. Symonds provides biometric strategies, drug interdiction strategies and solutions, command and control solutions, and traffic control including ALPR. Symonds services include protection of the city itself, ports and critical infrastructure, intelligence gathering, suspect and target vehicle monitoring, law enforcement and traffic enforcement.

The United Kingdom experience was designed to be self-funding. The cost was to be offset by the collection of evaded taxes on vehicle registrations. In late 2004, the U.K. Home Office introduced ALPR into 23 police forces for a one-year pilot program. The experiment was touted as a great success with more than 13,000 arrests made by ALPR teams. This was an arrest rate nine times higher than the police national average. In addition, over 8 million pounds of drugs and property were seized with a total of 180,543 cars stopped.

On a recent trip to Scotland, I stopped by the Stirling Police Station where Iain McAlpine of Central Scotland Police Branch provided me a tour. At strategic locations around the area, ALPR cameras were in place. Like an ever present, ever observing employee who never takes a break or time off, the system scanned every plate on the highway. Just as effortlessly, it crosschecked those plates against the Police National Computer (PNC), the Driver's Vehicle Licensing Authority (DVLA), and intelligence databases like the Scottish Intelligence Department (SID).

The monitor is observed in the communications center and sounds an alert if any license plate is recognized. It has to be seen to be appreciated. Think of your county warrant list and about having the vehicle plate of every person on that list, in the database. Strategically placed cameras on local interstates could read thousands of vehicle plates each day. Every time it "sees" a vehicle of interest, it immediately notifies the telecommunicator who in turn notifies patrol officers. That impresses me!

The level of satisfaction with the program is obvious. In the United Kingdom, funding is in place for construction of a national ALPR data center capable of holding 50 million ALPR reads each day. This year Britain will become the first country where every journey of every vehicle will be monitored and recorded.

The United Kingdom is way ahead of U.S. law enforcement in the use of ALPR, but our efforts in the fight against terrorism, a fight that will be with us from now on, will continue to push the use of ALPR in the United States and we'll see an increase in safety and security because of it.

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