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Automatic Number Plate Recognition

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The use by law enforcement agencies of automatic number plate recognition (ANPR) technology has been around for a while. It was the publicity about its use to arrest the occupants of a car on the night of the 30 June on the M6 in Cheshire, following the Glasgow Airport terrorist attack, that brought it to most people's attention.

The concept is to link the heavy use of surveillance cameras in the UK – where, with 1% of the world's population, there are 25% of the world's cameras – with passing data from imaged car licence plates to a database where "wanted" plate numbers are flagged up. Nearby police officers can then be told to follow the car and arrest the occupants.

There were certainly earlier precedents. For example, in November 2005 WPC Sharon Beshenivsky was shot and killed at a robbery in Bradford. The CCTV network in the town was able to use ANPR technology to identify the getaway car and track its movements, leading to the arrest of 6 suspects.
The idea may sound simple, but there are problems in capturing and identifying a correct image without false positives (spotting what isn't actually there) or false negatives (missing what's actually there).

The problems include poor image resolution (the camera may be too distant, or may be low-quality); blurry images, particularly if the vehicle is in motion; obscuring of the plate, such as a tow bar, dirt, or deliberate concealment; and an untypical fount, such as italics.
The biggest problem is poor lighting. This can be because of a lack of light, as in shading from trees or buildings, poor weather, or at night. It can also be the wrong light: glare from the sun, low sun, or reflections from headlights or overhead lighting.

To counter such problems, some countries now require counterreflective plates, which bounce light back to its source. This improves the contrast between the numbers and letters and their surroundings. Another approach is to alter the cameras to improve the lighting available for them.
A pioneer in that kind of work is PIPS Technology, who were called Pearpoint until 2002. They are based at Chandlers Ford, Hampshire. As Pearpoint they have applied for 20 published patent applications, and under their new name 6. Their web site claims that they are to their knowledge the biggest company in the world specialising in the field.

Their work includes the use of infrared light to improve the image. EP 1246118, my Patent of the Month, describes their most recently published innovation, which works by the camera suppressing glare and providing its own lighting.

Infrared illumination is shone onto the “indicia” in its reflective medium. The camera can be up to 22 metres away and the vehicle can be moving at up to 38 metres per second (about 85 mile per hour). A ring of infrared light emitting diodes (LEDs) surrounds the camera. To prevent blurring of the reflected indicia image, the infrared illumination is pulsed, with the camera shuttering in synchronism with the pulses. An “indicia image signal” is then processed. All this means that the reading apparatus is simple to implement, easy to maintain and relatively cheap.

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