Another car is about to cut in front of yours, coming from a blind spot. Traffic ahead slows suddenly--but you were daydreaming at the wheel. You're tired and drifting across to another lane without realizing it.

These are typical but hazardous highway situations, and a lot of engineering work was reported in the Congress presentations about developing ways to help motorists avoid an accident. There's radar distance control, but it's expensive. Digital cameras are available, and coming way down in cost, but they don't have the depth perception of the human eye. They can "see" a dangerous situation, but they don't have great enough precision to warn the driver, reliably every time.

Some active warning systems have been developed that use radar and cameras, and even can steer the car out of danger, apply the brakes and so on. But the needed vehicle hardware isn't in production yet. And the on-board computers are not nearly powerful enough, or the software precise enough, to make active systems salable in the litigation-happy U.S. market.

The mass-market answer has to be a warning system that's consistent and doesn't turn off drivers with a lot of false alarms. A Dutch company, MobilEye N.V., says it has the solution. It's called EyeQ, it's available at a thrifty price, and its development was exhibited at the Congress.

The camera is conventional, but MobilEye has it wired to a small chip with the processing power of two Pentium computers. The software is written to identify objects by size-width relationships and the speed with which they change in photographed size if they're moving. So a human is distinguished from an animal, a truck from a sports car, etc. So long as the objects are in view of the camera, their movements are monitored and analyzed. The software even can identify different types of lane markings.

With this approach, the EyeQ can sound a warning on its loudspeakers if it sees a sudden slowing in traffic ahead, a vehicle ready to cut in, a pedestrian starting to cross the street.

As an aftermarket kit, with dashboard display, add-on loudspeakers and installation, the price should be less than $1000. MobilEye said it's in talks with several major car manufacturers for 2006 installation. If EyeQ can be built-in, the harness connections to the steering, radio loudspeakers, computer module, as so forth become an almost no-cost extra that MobilEye believes could bring the price down to a few hundred dollars.
With MobilEye's EyeQ, a digital camera mounted at the rearview mirror monitors the road ahead and transmits pictures to a display panel and high-power computer.