



CP-enabled vehicle detects cyclist behind bus | Photo source [Cohda Wireless](#)

[Innovation](#) > [Mobility & Transport](#) > [Technology gives smart cars 'x-ray vision'](#)

## TECHNOLOGY GIVES SMART CARS 'X-RAY VISION'

 MOBILITY & TRANSPORT

### Researchers have developed technology that allows autonomous vehicles to track pedestrians and cyclists hidden from the line of sight by obstacles like buildings

**Spotted:** Researchers at the University of Sydney's Australian Centre for Field Robotics have developed technology that can allow autonomous vehicles to 'see' pedestrians and cyclists who are located in blind spots or obscured by fast-moving vehicles. The research was delivered in collaboration with connected vehicle company Cohda Wireless and the iMOVE Cooperative Research Centre.

The technology uses roadside information-sharing units, equipped with additional sensors such as cameras and lidar, that allow autonomous vehicles to share what they 'see' with each other using vehicle-to-vehicle communication. This system allows the vehicles to access a number of different viewpoints, significantly increasing their range of perception and allowing the connected vehicles to see things they wouldn't normally.

Tests of the system demonstrated that vehicles were able to predict potential threats to safety, such as a pedestrian rushing towards a crossing area. The vehicles could then take pre-emptive action, for example braking and stopping before the pedestrian reached the crossing area. The technology, called cooperative or collective perception (CP), is being commercialised by Cohda, and the engineers developing the technology hope that it could eventually be used to benefit all vehicles, even those not connected to the system.

Professor Eduardo Nebot, from the Australian Centre for Field Robotics, described the system as a 'game changer for both human-operated and autonomous vehicles'. He added that, "The connected vehicle was able to track a pedestrian visually obstructed by a building with CP information. This was achieved seconds before its local perception sensors or the driver could

possibly see the same pedestrian around the corner, providing extra time for the driver or the navigation stack to react to this safety hazard”.

Autonomous vehicle technology is moving ahead by leaps and bounds, but it still suffers from some significant limitations – including a limited ability to predict what people or animals might do. The work by the Australian team may go some way to overcoming this, along with recent innovations such as **remote-piloted** ride sharing and **in-car radar** warning systems.

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## **Takeaway:**

The work conducted on this project has been described by Cohda Wireless CTO Professor Paul Alexander as enabling smart vehicles to 'break the physical and practical limitations of onboard perception sensors'. This could ultimately lower the per vehicle cost of deploying connected and autonomous vehicle technology. Professor Alexander added that using CP for manually driven connected vehicles could also enable enhanced perception capability, 'without retrofitting the vehicle with perception sensors and the associated processing unit'. Aside from the benefits to advancing autonomous vehicles, the project also illustrated the way that collaboration between science and industry can enable new innovations.