

PROJECT

FNIR

Fusing Far-infrared and Near-infrared Imaging for Pedestrian Injury Mitigation

Funding: European (7th RTD Framework Programme)

Duration: Jan 2008 - Oct 2010

Status: Complete with results

Total project cost: €3,120,266

EU contribution: €1,900,000



Call for proposal: FP7-ICT-2007-1

[CORDIS RCN : 85247](#)

Background & policy context:

Road accidents involving pedestrians are far more frequent at night than during the day. More than 12 000 pedestrians and cyclists are killed and almost 300 000 are seriously injured in the EU every year. The most important factor is the driver's dramatically reduced range of vision.

Objectives:

Fewer pedestrians will be killed or seriously injured through improved driver warning strategies enabled by Night Vision systems with image analysis, detecting pedestrians up to 120m ahead. There are two types of night vision technologies on the market: Far-Infrared (FIR) and Near-Infrared (NIR) systems. FIR systems are passive, detecting the thermal radiation at wavelengths in the interval 8-12 μ m). NIR systems use a light source with a wavelength of around 0.8 μ m to illuminate the object and then detect the reflected light. The main advantage of NIR systems is the picture resolution and that the picture is easy to understand for the driver. FIR systems on the other hand offer a superior range and pedestrian-detection capability. A wide use of both technologies is currently limited by the system cost.

The objective of the project is to demonstrate the next generation Night Vision System with automatic detection of upcoming hazard at an affordable cost.

Methodology:

Using a combined NIR/FIR system enable substantial system cost reduction and increased performance through sensor signal fusion. The combined system allows cost reduction through reduced FIR sensor resolution, computing capacity, innovative European technology for molded FIR optics and FIR detectors designed for mass fabrication. The partners in the consortium represent some of the world's leading organisations in their field of expertise. They also represent different levels in the value chain. Successful completion of the project will create European industrial exploitation opportunities. Such opportunities will include infrared detector technology, optical components and affordable Pedestrian Collision Avoidance Systems.

Parent Programmes:

[FP7-ICT - Information and Communication Technologies](#)

Institute type: Public institution

Institute name: European Commission

Funding type: Public (EU)

Lead Organisation:

Autoliv Development Ab

Address:

Wallentinsvagen 22
447 83 Vargarda
Sweden

EU Contribution: €413,578

Partner Organisations:

Linköpings Universitet

Address:

Hus Origo Campus Valla
581 83 LINKÖPING
Sweden

Organisation Website:

<http://www.liu.se>

EU Contribution: €89,175

Kungliga Tekniska Högskolan

Address:

Brinellvagen 8
100 44 Stockholm
Sweden

EU Contribution: €307,600

Rise Acreo Ab

Address:

Box 1070
16425 Kista
Sweden

EU Contribution: €302,000

Sensoror As

Address:

Knudsroedveien 7
3189 Horten
Norway

Organisation Website:

<http://www.sensoror.com>

EU Contribution: €0

Daimler Ag

Address:

Mercedesstrasse
70327 Stuttgart
Germany

Organisation Website:

<http://www.daimler.com>

EU Contribution: €274,434

Sensoror As

Address:

Knudsroedveien 7
3189 Horten
Norway

Organisation Website:

<http://www.sensor.com>

EU Contribution: €256,636

Umicore**Address:**

Broekstraat 31
1000 Brussel
Belgium

EU Contribution: €256,577

Technologies:

Safety systems
In-vehicle technologies for navigation and safety

Development phase: Demonstration/prototyping/Pilot Production

Key Results:

The project developed a new and more efficient Night Vision system concept using FIR and NIR sensor technology. Combining will improve system performance while at the same time allow substantial cost reduction of the combined sensor system by making use of the complementary properties of the FIR and NIR sensors. The system that was invented as part of the FNIR project is a low cost system with a brilliant night view image on the one hand and a detection performance higher than that of a single sensor Night Vision system on the other hand.

Innovation aspects

FNIR was a concept development project employing fusion technology that was driven by European industry and informed by European academic innovation. It has created the foundation for European industry to achieve world leadership in the branch of Intelligent Vehicle systems known as Night Vision Enhancement (NVE). The low cost FIR sensors developed by consortium partners open up a new perspective to environment perception, especially of pedestrians, because the nature of FIR data greatly simplifies the computational task compared to, for example, visible light images. The successful completion of the project has therefore created European industrial exploitation opportunities, which reinforce Europe's industrial strengths. Such opportunities include infrared detector technology, optical components and affordable pedestrian collision avoidance systems.

The development and demonstration of the next generation NVE has the potential to solidify the position of European industry at the forefront of automotive infrared pedestrian detection systems, successfully leveraging the leading position of a European original equipment manufacturer. The combination of reduced cost and improved performance lays the FNIR foundation for more widespread adoption of the technology in the full range of passenger (and commercial) vehicles.

Strategy targets

- An efficient and integrated mobility system: *Acting on transport safety: saving thousands of lives*
- Innovating for the future: technology and behaviour

Documents:

 [Publishable part of the final report \(Final report\)](#)

STRIA Roadmaps: Cooperative, connected and automated transport

Transport mode: Road transport

Transport sectors: Passenger transport

Transport policies: Safety/Security

Geo-spatial type: Other