PROactive Safety for PEdestrians and CyclisTs

Sprawozdania

Informacje na temat projektu

PROSPECT

Identyfikator umowy o grant: 634149

Strona internetowa projektu

DOI
10.3030/634149

Projekt został zamknięty

Data podpisania przez KE
17 Kwietnia 2015

Data rozpoczęcia
1 Maja 2015

Data zakończenia
31 Października 2018

Finansowanie w ramach
SOCIETAL CHALLENGES - Smart, Green And Integrated Transport

Koszt całkowity
€ 6 931 978,75

Wkład UE
€ 6 931 978,25

Koordynowany przez
IDIADA AUTOMOTIVE TECHNOLOGY SA
Spain

Ten projekt został przedstawiony w...

Periodic Reporting for period 3 - PROSPECT (PROactive Safety for PEdestrians and CyclisTs)

Okres sprawozdawczy: 2018-05-01 do 2018-10-31

Podsumowanie kontekstu i ogólnych celów projektu

Accidents involving Vulnerable Road Users are still a very significant issue for road safety. According to the World Health Organisation, pedestrian and cyclist deaths account for more than 25% of all road traffic deaths worldwide. Autonomous Emergency Braking Systems have the potential to improve safety for this group of VRUs.
PROSPECT aims to significantly improve the effectiveness of active VRU safety systems compared to those currently on the market by expanding the scope of scenarios addressed by the systems and improving the overall system performance.
PROSPECT focusses on active safety solutions, where vehicle-based sensors survey the vehicle surroundings and the system acts actively in case of a critical situation with a VRU.
Within the project all relevant VRU traffic scenarios are considered, with a special focus on urban environments, where the large majority of VRU accidents occur.
The findings within the PROSPECT project will contribute to the generation of state-of-the-art knowledge, advanced technologies, assessment methodologies and tools for advancing Advanced Driver Assistance Systems towards the protection of VRUs.
The introduction of a new generation safety system in the market will enhance VRU road safety in 2020-2025, contributing to the ‘Vision Zero’ objective of no fatalities or serious injuries in road traffic set out in the Transport White Paper. Furthermore, test methodologies and tools shall be considered for 2018 and 2020 Euro NCAP test programmes, supporting the European Commission goal of halving the road toll in the 2011–2020 timeframe.

Prace wykonane od początku projektu do końca okresu sprawozdawczego oraz najważniejsze dotychczasowe rezultaty

Within the first period of the project, macro statistical and in-depth accident studies involving VRUs have been performed in Europe, focused mainly in pedestrians and cyclists. The most relevant accident scenarios have been obtained and clustered in use cases or target scenarios addressed by the project, which is the basis for the system specification. Naturalistic urban observations have been carried out in order to provide additional information with respect to the defined Use Cases. Typical behavioral schemes of traffic participants have been studied. Based on VRU detected and captured information over time, first models of determination of critical situation and collision risk estimation have been obtained. Based on HMI studies within the project, a basic HMI was under study; conceptual plans have also been designed for regarding vehicle control strategies for braking, steering or combined braking / steering interventions for implementation into the demo vehicle. Advanced articulated dummies, the driving simulator were also under study. Finally, a collection of test cases that are representative for all accident scenarios has been defined and specified. The first complete test protocol as a proposal for consumer has been obtained.

During the second period, the Consortium came up with a development of active safety solutions that address barriers of current advanced driver-assistance systems. The developed sensors intend to support a larger coverage of accident scenarios by means of: a) An extended sensor field of view (e.g. frontal stereo vision coverage increased to about 90°, radar coverage increased up to 270° covering vehicle front and one side); b) High-resolution and sensitive microwave radar sensors with enhanced micro-Doppler capabilities for a better radar-based VRU classification.

In the last stage, improved VRU sensing and situational analysis functions (enlarged sensor coverage; earlier and more robust VRU detection and classification; sophisticated path prediction and reliable intent recognition) were shown in three vehicle demonstrators at the final project event at IDIADA proving ground (Spain) in October 2018. All vehicles are able to automatically steer and / or brake to avoid accidents. Special emphasis was placed on balancing system performance in critical scenarios and avoiding undesired system activations. Each of mentioned technologies were demonstrated in three demonstrators that have their unique focus. A mobile driving demonstrator was used to present and evaluate the results of PROSPECT in a realistic setting applying a real car as a mock-up. Based on the results of the accident analysis it was possible to integrate common accident scenarios between car drivers and cyclists into the Audi driving simulator in order to demonstrate the circumstances of car-to-cyclist-accidents. Finally, in the context of testing tools development, advanced articulated dummies - Pedestrian and Cyclist - prototypes were completed by partner 4activeSystems to obtain higher degrees of freedom (head rotation, torso angle, pedaling, side leaning, etc.) and an improved behavior during the acceleration- and stopping-phase.

PROSPECT took a step forward in defining test and assessment methods for Euro NCAP AEB VRU systems. Euro NCAP directly benefits from the project’s findings and results, especially by being supplied with deliverables including test protocol as a proposal for consumer testing (final deliverable was shared during AEB/AES Working Groups meetings and will be discussed even beyond of the project), the above mentioned dummy and verification testing. The baseline tests, consumer tests with demo-cars were concluded and analysed in summer 2018. The independent acceptance and simulator studies were concluded in July 2018 in D7.3. Finally, the project consortium implemented

the benefit estimation methodology that includes an assessment of the combined effect of active and passive safety measures (i.e. integrated safety).

The industrial partners focused on exploitation of PROSPECT results in the context of next generation active VRU safety system with main focus on passengers cars. The academic partners improved the state of the art knowledge at European level from real world accidents involving vehicles and VRU. This know-how was published in recognized conferences proceedings and journals.

Innowacyjność oraz oczekiwany potencjalny wpływ (w tym dotychczasowe znaczenie społeczno-gospodarcze i szersze implikacje społeczne projektu)

- PROSPECT aims to effectively reduce car-to-pedestrian and car-to-cyclist accidents, which result in serious or fatal VRU injuries. This reduction is based on a higher scope of addressed scenarios and a better performance of the system developed in the project.
- Data from normal driving, incidents and accidents are the basis for road safety measures. The PROSPECT project summarised the state-of-art and extend the knowledge about VRU accidents. Vehicle safety system development was dependent on the latest information from accident research and an up-to-date accident analysis focusing on VRUs increased the relevance and effectiveness of the systems developed in PROSPECT as well as those in future projects.
- The different technologies and testing tools developed within PROSPECT allow:
- To address Euro NCAP 2020 scenarios and fulfil the increasingly strict requirements.
- The entrance of new vehicles in the EU market.
- High safety standards that deliver a true benefit to consumers in Europe and to society as a whole.
- Information about the findings within PROSPECT were forwarded as relevant input for Euro NCAP decision makers in parallel to the PROSPECT work.
- The PROSPECT partners also participated in ISO Working Groups that aim at standardising VRU collision mitigation systems as well as test equipment and tools for active safety systems.

Ostatnia aktualizacja: 16 Grudnia 2024

Permalink: https://cordis.europa.eu/project/id/634149/reporting/pl