active AI-based accident prevention system

BERCMAN®

smart pedestrian crosswalk

Poor decisions made by road users, attributed to the lack of information about the traffic environment, can be considered the primary cause of traffic accidents on pedestrian crosswalks. We have developed a device to solve this problem.

The Smart Pedestrian Crosswalk (SPC) monitors the situation on traffic lanes and sidewalks and offers several safety and notification functions. The main task of the SPC is to improve the awareness of road users located nearby and to notify road users of the probable traffic hazards — thus increasing situational awareness (SA) for all parties. The SPC increases SA with LED lights on a pole, an audio signal for the pedestrians, and constantly backlit crosswalk signs. To detect situations involving traffic hazards, narrow artificial intelligence algorithms are used, which are capable of predicting the moving trajectories of the road users and warn them in advance.

To attain the objectives of Level 5 autonomous driving, we need to improve the perception of the vehicles beyond what is currently offered by on-vehicle sensors. At Bercman, we achieve this by enabling additional perception for the vehicles through roadside sensors, for example by using our Smart Pedestrian Crosswalk to see around corners and detect road users well in advance. The SPC supports V2X (infrastructure-to-vehicle) communication enables automatic communication between all communication-ready traffic entities.

Main functionalities
- Notification about pedestrians for drivers
- Backlit crosswalk sign
- Active AI-based accident prevention system
- Data collecting
- Connectivity with vehicles and other infrastructure
- Solar-powered system

Key benefits
- Increased safety on pedestrian crosswalks for a better living environment in the city;
- Automated traffic and environmental data collection for better city planning;
- Communication with connected and autonomous vehicles for a better understanding of road users' situational awareness.

References
Case studies and installed crosswalks can be found here:
www.bercman.com/products/spc

Target groups
- Cities and Municipalities
- Road infrastructure and traffic engineering companies
- Data and traffic science related entities
- Autonomous vehicle (V2X) and IoT solution providers

Value created
- The economic damage to society caused by the loss of life of one person in traffic is, in 2016 prices, approximately 2.1 million euros (Estonian Road Administration, Traffic Safety Program 2016—2025).
- Replacing traffic lights with SPCs will reduce CO2 emissions from cars, as vehicles do not necessarily have to stop at a pedestrian crossing.

Contact

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