

Energieautarkes Straßenradar erkennt Wildtiere

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Ein selbstlernendes Radarsystem als ein Netzwerk am Straßenrand

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Energie bezieht es über ein integriertes Solarmodul und es kommuniziert via LoRaWAN.



Das intelligente Straßenradar kombiniert Radar, optische Kameras und Infrarotsensoren mit einem neuronalen Netzwerk. Dazu kommuniziert das Radarsystem mit Sensoren am Straßenrand.

(Bild: Spectrum Instrumentation)

Alle zwei Minuten ereignet sich auf deutschen Straßen ein Unfall mit Wildtieren, allein im Jahr 2015 entstanden dadurch der Versicherungsbranche Kosten von mehr als 600 Mio. Euro. Doch die Unfälle lassen sich verhindern: Forscher haben zusammen mit Industriepartnern das Projekt „SALUS“ geschaffen, einer Mischung aus Radar, optischen Kameras und Infrarotsensoren sowie neuronalen Netzen.

Link: <https://www.next-mobility.news/energieautarkes-strassenradar-erkennt-wildtiere-a-935523/>

Intelligent road-side radar detects wild animals

By Julien Happich

The Universities of Applied Sciences of Ulm and Heilbronn along with industrial partners have created "SALUS", a machine-learning system designed to be able to differentiate between pedestrians, cars, bicyclists, motorbikes, deer, foxes, wild boar etc. predicting the behaviour of these objects.

Combining a radar, optical cameras and infrared sensors with neural networks, the system sends warnings to car drivers and other road users to prevent accidents. The data of a micro-Doppler radar is gathered by a Spectrum Instrumentation PCIe digitizer card M2p.5926-x4 that provides the required number of channels and bitwidth.

"Car manufacturers are installing driver assistance systems starting with high end models but this will take time to filter down to other models. Similarly, high end motorcycles are starting to have such functionality but limited installation space will mean that it will be very difficult to achieve anything comparable to a car-based alert system. The aim of our project is to have small installations by the roadside that detect hazards and communicate this to vehicles as they approach. In addition, for road users without in-car warning displays, road lights could be turned on to highlight the area of the hazard and/or warning notices illuminated. Project SALUS detects and warns of the harder-to-see hazards and should significantly improve road safety", said Professor Dr. Hubert Mantz from the Ulm University of Applied Sciences, one of the leaders in the project.

The technical demonstrator system will be able to measure simultaneous data from three sources – radar, optical camera and infrared camera. Additional sensors could be integrated, for example, to measure pollution levels, which has already generated commercial interest from companies in the Project's consortium. The project envisages wide-scale deployment of self-contained units as posts beside roads across Germany, which means that they must be inexpensive and solar powered. The latter is particularly important for rural areas where mains electricity is not readily available and the need for such a warning system is greatest as street lighting is scarce.



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This also means that the communication system between units to form an intelligent transport infrastructure must be low power so Long Range Wide Area Network (LoRaWAN) is used as it can reach up to 40 km in rural areas.

"We are using neural networks to develop the machine learning that enables the system to differentiate between e.g. bicyclists, cars or deer. This takes it far beyond pure motion detection," added Professor Mantz. "We are at the critical part of the project which is the classification of detected objects, which has never been done before. With this, the system will be able to predict the movements of objects which adds incredibly useful, real-time intelligence to the system enabling it to foresee how a hazardous situation could develop."

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Intelligent system developed to detect animals on the road

News

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The Universities of Applied Sciences of Ulm and Heilbronn in Germany, along with industrial partners, have created SALUS, a mix of radar, optical cameras, infrared sensors and neural networks system designed to detect animals on the road. The machine-learning system differentiates between other road users and animals, then predicts their behaviour and sends a message to nearby drivers.

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Link: <https://www.electronicsworld.co.uk/intelligent-system-developed-to-detect-animals-on-the-road/24218/>