Universidad de Alcalá

SENSOR SYSTEM FOR THE DETECTION OF OBJECTS/OBSTACLES IN CRITICAL POINTS OF RAILWAY LINES

Patent
ES2377802

Code

TRANSP_UAH_16

Application areas

- Industrial Manufacture, Material and Transport technologies
- Environment and risk prevention Electronics
- Information and Communication Technologies

Type of Collaboration

- Technical cooperation
- Commercial agreement with technical assistance
- License agreement

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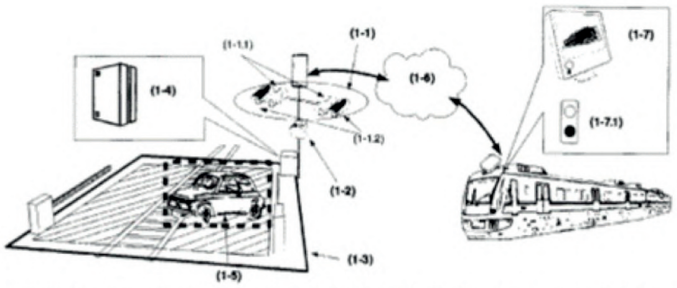

Esquema ilustrativo donde se representa la ubicación de los componentes del sistema (cuatro cámaras de área (1-1), sistema de iluminación infrarroja (1-2), sistema de procesamiento (1-4), enlace radio (1-6) y sistema de visualización a bordo del tren (1-7)), respecto a la zona (1-3) donde se pueden encontrar objetos a detectar (1-5).

ABSTRACT

The research group in Electronics Engineering Applied to Intelligent Spaces and Transport (GEINTRA) of the Department of Electronics of the University of Alcalá has developed a sensor device and its corresponding procedure to detect the presence of any type of objects (vehicles, people, animals, etc...) in points of interest of the railway route (level crossings, tunnels, etc.), sending to the train the visual information and corresponding warning signs.

The device consists of a set of cameras located in the environment of each point of interest, an infrared lighting system, an image processing module and a wireless communication system with the train.

The system contributes to the increase of safety in rail transport, providing the machinists with visual information about the state of the conflicting points and notifying the presence of obstacles. The system is capable of detecting the presence of objects in daylight and nighttime conditions.

ADVANTAGES AND INNOVATIONS

The system includes an intelligent video processing module, whose mission is the automatic detection of possible elements that can cause an accident (with danger for the personnel on the ground, like a run over, and also with danger for the train, like a derailment).

In addition, the image processing system allows image transmission from the risk area to the train approaching the area and the detection of anomalous objects in that area and the transmission of the corresponding alarm to the train.

The proposed invention has the following advantages:

- Images in real time, and continuously, of what is happening at a specific point.
- Quick assessment of whether there is a risk situation.
- Increased safety in circulation.
- Elimination of possible human errors and facilitates the function of the machinist.
- High commercial potential at national and international level with moderate cost.