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FAS INTELLIGENT ELECTRONIC EXTERIOR

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FAS INTELLIGENT ELECTRONIC EXTERIOR MIRRORS

Technical task:

The task of the technical innovation is to make the image section of a camera-monitor system influenced by changing the viewing angle.

Initial situation:

In the development and in the market are electronic mirror systems, with which cameras and displays replace the mirrors. It is a replacement for the classic exterior mirrors on the doors as well as a replacement for the rearview mirror. These systems have in common that for their design requirements for classic mirrors such as fields of view or minimum imaging properties on object sizes in degrees are used. However, cameras are permanently installed and the displayed image area on the display is therefore independent of the head position of the driver, unlike real mirrors.

As a rule, there is a possibility of adjusting the image section in order to adapt the image to personal preferences, e.g. how much self-contour of the vehicle is displayed. For this reason, the field of view of the camera is usually greater than the detail ultimately shown on the display.

This setting is then largely fixed, there is only to support parking situations, a vertical shift of the image section of the passenger side image when engaging the reverse gear, corresponding to a lowering of a real mirror.

When using a real mirror, the perceived section of the scenery depends on the angle of the viewing direction in the mirror. Moving the head changes this angle and thus also the picture detail. This is deliberately used by drivers, in order to be able to see a different picture section than in the basic setting.

A typical situation in which drivers can use this is to drive onto the highway or a highway when the Einfädelspur is brought in a curve to the lane. If the driver tilts his head to the side, he shifts his field of vision so that he can see better of the following traffic, although the vehicle is not yet parallel to the actual roadway.

Also typical is a use to e.g. To be able to see children in the back seat better (control look), what one if necessary easily straightens up in the seat.

This effect no longer works with electronic exterior mirrors, since the display does not depend on the driver's viewing angle on the display.

Solution:

The technical innovation is to enable an intelligent control of the image section, specifically a shift and a zoom.

The following methods (individually or in combination) can be used:

- Evaluation of the head movement or viewing direction via driver observation camera (s). Thus, replicating the behavior that corresponds to changing the angle of view to a classic mirror,
- Use of information about the driving situation, e.g. Curvature data of the route, considering threading situation, relevant objects detected by sensors. Thus, the desired section and the vehicles located there can be optimally represented by moving,

- Speed-dependent and driving situation-dependent adjustment of the field of view (possibly only as a partial excerpt in the form of a „magnifying glass function“), for. indicate vehicles approaching at high speed on the adjacent lane more clearly in the sense of a lane change warning,
- Use of an interior camera in order also to be able to display partial area of the vehicle interior (for example the rear bench) in the interior mirror display, also controlled by driver observation camera (or other input media).

Possible application:

- All vehicles with camera-monitor system as mirror replacement and corresponding sensors (interior cameras).