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CHILD SEAT WITH REPLAY FUNCTION

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Technical task:
The subsequent development evaluates conversations in the vehicle interior and thus enables automatic output of answers to recurring questions.

Initial situation:
Child seats do not have the ability to capture repeated identical questions and automatically reproduce the answer. Especially on longer car journeys, children often ask the same questions, e.g. "Are we there yet?" or "How long will the journey take?" This often leads to additional stress for the parents and possibly to annoyance and conflict situations. In addition, if the cognitive load is high, the driving task and the additional questions can lead to dangerous driving situations. In the field of audio detection and support in the car interior, there are currently patent applications DE112017007282T5 and DE102017213252A1 which clearly differ from the invention disclosure shown here, as they do not detect recorded responses based on conversations in the car interior.

Solution:
The questions of a child in a child seat or on the back seat are recorded by the vehicle microphones or microphones in the child seat as well as the parents' answers to them. If the child now asks the same questions within a short period of time, the parents' answers are automatically played back based on the recording. This can be done via the vehicle loudspeakers in the rear of the vehicle or via loudspeakers installed in the child seat. In addition, the stress level, the cognitive load as well as the emotion of the driver or the parents, which is provided by another system, can also be taken into account.

Advantages:
Conflict situations between parents and children due to repeated identical questions are avoided. In addition, the driver's cognitive load is not increased further, thus avoiding potentially dangerous situations.

Possible application:
First, the questions and respective answers of the parents must be recorded in the vehicle. This can be done via the vehicle microphones or via microphones built into the child seat. This information is then made available to a computer unit installed in the vehicle. Machine learning models run on this arithmetic unit, which learn through Natural Language Processings Embeddings and can thus check the children's questions for equality.

If this function determines that the children's questions are very similar, this is passed on to the Replay component. This replay component takes into account other information from the vehicle interior, such as the cognitive load, stress level and the emotions of the driver or parents. To what extent these are taken into account can be set by the parents or the driver via an app or the multimedia system. For example, the answer can always be played back for the same questions, or only when a certain stress level / cognitive load or certain emotions are reached. In addition, it is possible to set the length of time for the replay functionality, i.e. whether, for example, the same questions should only be viewed within a 10-minute window. In addition, the frequency of the same question from which the replay function is triggered can be set.

Based on the embeddings and the information provided by the machine learning function, the replay component stores the recorded answers according to the previously set window of the parents. If the threshold values described above are now exceeded, the recorded response of the parents is played back. This can be done either via the vehicle's loudspeakers in the rear area or via loudspeakers installed in the child seat.

In principle, the functionality can also be implemented without the vehicle context. For this, microphones, computing units and loudspeakers would have to be installed in the child seat. However, the most common application seems to be longer car journeys, which is why it makes sense to look at it in this context.