SCIENTIFIC INSTRUMENT TO CONTROL THE ACTIONS OF THE DRIVER AND THE RESPONSE OF CAR

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The article describes the structure, purpose and operation of a set of instruments for the study of driver control actions and responses car offered for experiments designed to study the effectiveness of the system "car-driver-road"

Handling of the car, the system "car-driver-road" performance driver.

The basis of the reliability of the driver's performance, which is studied in the "car-driver-road" (A-B-D). On it can be judged only after prior training on the basis of quality indicators of activity: time, accuracy, algorithmic actions and psychophysiological "efforts" of the driver. On the performance of the driver in the "tracking" the greatest way affect the handling characteristics of the car and the road geometry. Adjustable characteristics of the machine and regulatory characteristics of the driver must be compatible. Behavior to drive and road geometry must be clear to the driver and not to present surprises. Learning to drive is considered as a system optimization A-B-D based on said performance of the driver and is due to the establishment, strengthening and duplication of links between elements of the system [1]. The success of the training depends on whether the student is able to understand them. Is offered a fact of accident with a car regarded as a violation of the links in the A-B-D. To confirm these theoretical premises and obtain a quantitative measure of the symbiosis of man and machine, and proposes the use of expensive equipment set.

The purpose of research - to substantiate the composition, purpose and principle of operation of a set of instruments for the study of driver control actions and responses of the car.

Material and methods of research. The composition proposed for experimental studies a set of devices as mobile laboratories, mounted on a vehicle, is shown in Fig. 1. From the composition presented for consideration in this article include:

- Testing instruments handling characteristics of the car, including the driver control actions and responses of the car (UDVRA);

- Devices for recording path, time, speed of the machine:

- Devices for the analysis of the frequency of use controls;

These components be completed to ensure a comprehensive study of certain indicators of skill drivers.

Instrumentation easily removable, compact, adapted to be mounted on vehicles like UAZ-3151, GAZ-3307, ZIL-4331, Ural-4320, KrAZ-260. The instrument is operated from the cab and the body of the machine.

The results of research. The use of the proposed device allows to set frequency measurement wheel turns - 3, 5, 12, 15 °, fuel pedal - every 1 cm in one minute interval, the frequency of changing the speed of movement - every 3 km / h above or below the selected or driver training set constant speed. Measurement precision driving was done using pnevmogidrotraektografa by determining the value of the average effective error deviation from the route.

Findings

The proposed set of instruments allows to evaluate the driver's ability to commit gross and subtle regulation of rotation by analyzing the degree of conversion of the control signal from the steering wheel ("input") before turning the car ("exit").

Using a set of simultaneous analysis of the frequency of use of controls and taking into account traffic conditions made it possible to speculate about the presence of the driver of each of its "comfortable" rhythm and motion control at each stage of learning. With the change in the strength of the ability (skill) that rhythm changes; in various road conditions, it is saved almost constant. If traffic conditions are complicated, the driver seeks to change the speed of movement, rather than the number of turns of the steering wheel - "rhythm" of the movement and control is maintained. This phenomenon is explained by the persistence of news processing and control information.

Using laboratory allowed to hypothesize that the composition of the control actions of the driver is greatly affected by the ability of both defining its individual "comfortable" rhythm and motion control, and the ability Admission of news

information on road traffic conditions, as well as developing the command and control information in the system A-B-A.