the likely movement direction of targets in correlation with the nature of the terrain and the presumed mission.

Brief description of the invention

[0013] The invention aims to address at least one of the drawbacks of the aforementioned state of the art.

[0014] The invention aims to reduce the cognitive work of the operator and to improve the machine-operator interface.

[0015] The invention also aims to allow a faster execution of operations that is less disrupted by outside conditions.

[0016] More specifically, the invention aims to allow a “legible,” comfortable and fluid view of the commands and of the outside and inside environment of the armored vehicle combined with an optimized use of the eye of the operator providing an instantaneous reaction using the sequences strictly speaking of engagement and initiation of firing.

~~Main features of the invention~~Summary

[0017] The present ~~invention~~ disclosure relates to a system for controlling functions in an armored vehicle turret using a smart headset allowing an offboard view of the environment and access to the operating and firing commands.

[0018] A first aspect of the ~~invention~~ present disclosure relates to a system for controlling turret functions of a land-based combat vehicle, said control system comprising:

- a plurality of image detection sensors configured to record sequences of images having an at least partial view of the 360° environment of the land-based combat vehicle;
- at least one virtual, augmented or mixed reality headset suitable for being worn by an operator, said headset being configured to present said at least partial view of the environment of the land-based combat vehicle on a display, said headset including a direction sensor suitable for tracking the orientation of said headset imparted during a movement of the operator's head as well as eye tracking means suitable for tracking eye movements of said operator;

- a control unit, comprising at least one computing unit and suitable for receiving as input and processing:
    - images supplied by the image detection sensors;
    - headset position and orientation data supplied by said direction sensor;
    - eye position data supplied by the eye tracking means;

the control unit being suitable for computing an augmented view at least based on said images and headset position and orientation data, said augmented view being displayed for the operator by means of said headset;

said control unit further being suitable for determining parameters of a target selected by the operator at least based on eye data, said control unit being configured to compute at least one firing parameter and said control unit being suitable for transmitting the at least one firing parameter to a turret weapon controller;

said control system including at least one firing request detector configured to supply a firing request signal by the operator.

[0019] The control system is characterized in that the at least one virtual reality headset comprises at least one additional image detection sensor for recording sequences of images of the environment inside the land-based combat vehicle, said control system being suitable for receiving data associated with said images and displaying it in the augmented view upon request by an operator.

[0020] According to advantageous ~~embodiments~~ examples~~of the invention~~, the system for controlling turret functions of a land-based combat vehicle comprises one or several of the following technical features, according to any possible combination:

- said firing request detector comprises at least one joystick or free hand lever configured as touch-sensitive sensor;
- said firing request detector comprises at least one voice recognition module suitable for supplying the firing request signal;
- coordinates of a point of the gaze of an operator in the or each augmented view are determined based on eye tracking means and the system is configured such that a virtual object associated with said point is integrated into said view and is positioned according to said coordinates;
- the system comprises means for determining parameters of at least one potential target based on images supplied by the image detection sensors, the

- data corresponding to the GPS coordinates of the selected target;

- the image detection sensors include at least one camera with 360° visibility and/or at least one rotating and/or pivoting optronic camera, high-definition with zoom;
- the at least partial view of the environment of the land-based combat vehicle corresponds to the clear view that an operator would have without hindrance from at least one wall portion of the body and/or of the turret from a position connected to the body and/or to the turret of the land-based combat vehicle, said position preferably being inside the body.

[0021] Another aspect of the ~~invention~~ present disclosure relates to a land-based combat vehicle including:

- a system according to the ~~invention~~above aspect, as described above;
- an armored automobile body and a motorized turret both able to bear the image detection sensors;
- a cannon and/or a missile launcher positioned on said turret;
- a turret weapon controller positioned on the land-based combat vehicle configured to receive the at least one firing parameter from said system.

[0022] The measures of the invention are advantageous in that they make it possible to improve the machine-operator interface. They also allow faster operations. The use of a virtual or augmented or mixed reality headset can be suitable for further making it possible to better protect the eyes, the hearing system and the face of the operator and thus decreases the risk of serious injuries, which can increase its involvement. The use of a virtual or augmented or mixed reality headset also allows better management of the superposition of the inside and outside views.

[0023] In general, the advantageous embodiments of each object of the invention are also applicable to the other objects of the invention. To the extent possible, each object of the invention can be combined with the other objects. The objects of the invention can also be combined with the embodiments of the disclosure, which can also be combined with one another.

Description of the figures

[0024] Other features and advantages of the present invention will be better understood using the drawings and the description below.