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Dr. Hany Abd El-Lateef
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P.O. Box 400
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SAUDI ARABIA

Docket No. 33120.16S
Client Reference No. PA000598
Re: Preliminary Patentability Search for a

Safe and Harassment Free Ride for Everyone

Inventors: Muhammad Aasim Rafique

Dear Dr. Hany:

We thank you for selecting our law firm to conduct this patent screening search for published patent documents which relate to the above invention. We searched available patent records at the U.S. Patent and Trademark Office (USPTO) and the European Patent Office (EPO) for patent documents which relate to your invention. The object of the search was to find documents in the form of existing Patents or published Patent Applications and any ancillary non-patent publications, that may show your invention or one similar to the inventive concept. This report summarizes the search results and provides recommendations.

Should you file a non-provisional patent application, the Examiner assigned the application will conduct a similar search directed to the claims of the patent application when it is examined.

Summary of Invention

The invention described to us is understood to relate generally to ride service monitoring systems. More specifically, the invention is a system in which non-driving controls/functions may inform a passenger about the safety of a vehicle and the security of the journey they may take. The vehicle controls are connected to an electronic control unit (ECU) often called an electronic control module (ECM) with a controller area network (CAN) Bus. The data on the CAN Bus is accessed using an OBD-II connector. The data from the ECU is collected and analyzed to find compliance with guidelines for passenger safety. A camera mounted on a back-mirror may monitor a driver's activity during a ride and capture anomalous behavior and collect clues which may lead to an unfavorable situation for a passenger initiated by the driver. The system is integrated with a mobile application used by the ride-hailing service and the data is shared with the passenger, driver and

ride-hailing service central command room. There are three loosely coupled modules of the system.

1. SH'FRE Dongle: mounted with an intelligent chip to filter CAN messages and capture required messages only; a Bluetooth transmitting chip transfers data.
2. SH'FRE anomaly detection: a computation module to run a continuous anomaly detection algorithm on CAN messages.
3. Intelligent camera module: an activity recognition module based on input from the camera and detecting behavior of a driver.

Search Results

Following are links to the documents that we consider relevant to the invention:

| <u>Patent Document No.</u> | <u>Inventor</u> | <u>Date</u> |
|---------------------------------|---------------------|-------------|
| US20170046952A1 | Yang et al. | 2017-02-16 |
| US20170132521A1 | Xu et al. | 2017-05-11 |
| US20200008028A1 | Yang | 2020-01-02 |
| US20200082188A1 | Singh | 2020-03-12 |
| US20200184738A1 | Ngo | 2020-06-11 |
| US7812711B2 | Brown et al. | 2010-10-12 |
| US10909476B1 | Sanchez et al. | 2021-02-02 |
| US10127810B2 | Durie, Jr. et al. | 2018-11-13 |
| US11210873B2 | Balakrishnan et al. | 2021-12-28 |
| US11496617B2 | Davis | 2022-11-08 |

Upon review of the enclosed references, you will note that vehicle safety and driver monitoring systems have been disclosed previously.

Of particular interest is the published application [US20200082188A1](#), to Singh, which shows a system 100 of real time monitoring of a vehicle. System 100 includes external entities 104, user devices 102, security device 106, server 108, and a storage device 110. The server 108 can communicate with the external entities 104, the user devices 102, and the security device 106 using a communication network such as Bluetooth. User device 102 can be a mobile phone, smart phone, tablet, computer, etc. used to communicate with server 108 and security device 106. External entity 104 can be a fleet monitoring center, a surveillance center, nearby vehicles, at least one emergency contact/one or more third parties, emergency services, law enforcement agencies and so on. The security device 106 can be an Artificial-Intelligence (AI) assisted security surveillance device placed inside or outside of the vehicle at a suitable location. For example, the security device 106 can be placed on a dashboard of the vehicle, below a rearview mirror of the vehicle, above the rearview mirror of the vehicle, at a commuter side of the vehicle, at a driver side of the vehicle, and so on. The security device 106 can be coupled to at least one sensor placed in the vehicle at suitable locations. Examples of the at least one sensor can be, but not limited to, a media sensor/camera, a microphone, cameras, motion sensors, accelerometers, gyroscopes,

shock sensors, IMU (Inertial Measurement Unit), ultrasonic sensors, light sensors, Infrared (IR) sensors, and so on (see paragraphs 30, 32, 33, 34). Figure 2 shows security device 106 having communication ports 214 which allow for communication with a CAN bus and On-board diagnostics and so on (see paragraph 54). Figures 11-13 show example images of driver monitoring appearing on a smartphone application. Figure 3a shows server 108 that may analyze an identified event as an unusual event and generate emergency alerts. Server 108 may form part of security device 106 in the embodiment of figure 1b (see paragraphs 42-44). Visual processing unit 310 generates emergency alerts on detecting an unusual event such as text alerts, email alerts, voice based alerts, and so on. Relevant information and data related to the event may also be communicated such as images, location, media, and so on (see paragraph 86).

Of additional interest is the published application [US20170132521A1](#), to Xu et al., which discloses a driving behavior evaluating method and device. Figure 3 shows a structural schematic diagram of the system which includes a driver face camera 314 and CAN bus protocol analysis module 350. Module 350 may acquire data on a vehicular CAN bus and determine the current running state of a vehicle by data analysis. Figures 1-2 illustrate flow diagrams of driver behavior evaluating methods, including in figure 2 step 201 of acquiring driver driving behavior information and step 202 of sending prompt information when a dangerous driving behavior has been determined.

The remainder of the above-listed references was selected to further illustrate disclosures in the field of vehicle and driver safety monitoring systems.

Recommendations

Based upon the search as made, the features relating to a system of providing a Safe and Hassle Free Ride for Everyone have been found, in our opinion, particularly, in [US20200082188A1](#), but also in [US20170132521A1](#). Thus, it is our opinion that there is a limited chance of obtaining a patent directed to your concept. We do not therefore recommend filing a patent application, at this time. In addition, we request that the inventors provide us with any comments they may have regarding features that distinguish their invention from the cited references to determine whether there is any basis for proceeding.

In the event of any questions, do not hesitate to email Joshua Goldberg at jgoldberg@nathlaw.com.

Very truly yours,
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Joshua B. Goldberg
Co-managing Partner

JBG:fml
Enclosures