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Automatic real time information to vehicular occupants

Abstract

A system, program product, and method for automatic collection, generation, and presentation of real time information to vehicular occupants are presented. The method includes determining a first driver profile for a first driver of a first vehicle. The method also includes determining, subject to the first driver profile determination, a color assignment for the first driver. The color assignment is at least partially indicative of the driver profile and the color assignment is at least a portion of a representation of the first driver. The method further includes communicating the color assignment to one or more of one or more potential occupants of the first vehicle and one or more occupants of the first vehicle.

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Background/Summary

BACKGROUND

(1) The present disclosure relates to automatic collection, generation, and presentation of real time information to vehicular occupants, and, more specifically, to automatically and dynamically provide recommendations and insights to the passengers and operator of a vehicle while travelling therein.

(2) Many known vehicular routes experience heavy traffic conditions, varying road quality conditions, and a broad spectrum of vehicle operators and passengers with respect to experience and temperament.

SUMMARY

(3) A system, computer program product, and method are provided for automatic collection, generation, and presentation of real time information to vehicular occupants.

(4) In one aspect, a computer system is provided for provided for automatic collection, generation, and presentation of real time information to vehicular occupants. The system includes one or more processing devices and one or more memory devices communicatively and operably coupled to the one or more processing devices. The system also includes a transport information tool communicatively and operably coupled to the one or more processing devices and the one or more memory devices, The transport information tool includes a vehicle occupant profiling engine configured to determine a first driver profile for a first driver of a first vehicle. The transport information tool also includes a modeling engine configured to determine, subject to the first driver profile determination, a color assignment for the first driver. The color assignment is at least partially indicative of the driver profile and the color assignment is at least a portion of a representation of the first driver. The computer system also includes a computer network configured to communicate the color assignment to one or more of one or more potential occupants of the first vehicle and one or more occupants of the first vehicle.

(5) In another aspect, a computer program product embodied on at least one computer readable storage medium having computer executable instructions for automatic collection, generation, and presentation of real time information to vehicular occupants that when executed cause one or more computing devices to automatically and dynamically provide recommendations and insights to the passengers and operator of a vehicle while travelling therein. The computer executable instructions

when executed also cause the one or more computing devices to determine a first driver profile for a first driver of a first vehicle. The computer executable instructions when executed also cause the one or more computing devices to determine, subject to the first driver profile determination, a color assignment for the first driver. The color assignment is at least partially indicative of the driver profile and the color assignment is at least a portion of a representation of the first driver. The computer executable instructions when executed further cause the one or more computing devices to communicate the color assignment to one or more of one or more potential occupants of the first vehicle and one or more occupants of the first vehicle.
(6) In yet another aspect, a computer-implemented method is provided for automatically collecting, generating, and presenting real time information to vehicular occupants. The method includes determining a first driver profile for a first driver of a first vehicle. The method also includes determining, subject to the first driver profile determination, a color assignment for the first driver. The color assignment is at least partially indicative of the driver profile and the color assignment is at least a portion of a representation of the first driver. The method further includes communicating the color assignment to one or more of one or more potential occupants of the first vehicle and one or more occupants of the first vehicle.
(7) The present Summary is not intended to illustrate each aspect of, every implementation of, and/or every embodiment of the present disclosure. These and other features and advantages will become apparent from the following detailed description of the present embodiment(s), taken in conjunction with the accompanying drawings.

Description

BRIEF DESCRIPTION OF THE DRAWINGS
(1) The drawings included in the present application are incorporated into, and form part of, the specification. They illustrate embodiments of the present disclosure and, along with the description, serve to explain the principles of the disclosure. The drawings are illustrative of certain embodiments and do not limit the disclosure.
(2) FIG. **1**A is a block schematic diagram illustrating a computer system including an artificial intelligence platform suitable for leveraging a trained cognitive system to facilitate automatic collection, generation, and presentation of real time information to vehicular occupants, in accordance with some embodiments of the present disclosure.
(3) FIG. **1**B is a block schematic diagram illustrating the artificial intelligence platform shown in FIG. **1**A, in accordance with some embodiments of the present disclosure.
(4) FIG. **1**C is a block schematic diagram illustrating a data library shown in FIG. **1**A, in accordance with some embodiments of the present disclosure.
(5) FIG. **2** is a block schematic diagram illustrating one or more artificial intelligence platform tools, as shown and described with respect to FIG. **1**, and their associated application program interfaces, in accordance with some embodiments of the present disclosure.
(6) FIG. **3** is a schematic diagram illustrating the system with respect to FIGS. **1**A-**1**C in a plurality of scenarios that an operator of a transport vehicle will typically encounter, in accordance with some embodiments of the present disclosure.
(7) FIG. **4**A is a flowchart illustrating a process for automatic collection, generation, and presentation of real time information to vehicular occupants, in accordance with some embodiments of the present disclosure.
(8) FIG. **4**B is a continuation of the flowchart presented in FIG. **4**A,
(9) FIG. **5** is a block schematic diagram illustrating a computing system, in accordance with some embodiments of the present disclosure.
(10) FIG. **6** is a block schematic diagram illustrating a cloud computing environment, in

accordance with some embodiments of the present disclosure.
(11) FIG. **7** is a block schematic diagram illustrating a set of functional abstraction model layers provided by the cloud computing environment, in accordance with some embodiments of the present disclosure.
(12) While the present disclosure is amenable to various modifications and alternative forms, specifics thereof have been shown by way of example in the drawings and will be described in detail. It should be understood, however, that the intention is not to limit the present disclosure to the particular embodiments described. On the contrary, the intention is to cover all modifications, equivalents, and alternatives falling within the spirit and scope of the present disclosure.
DETAILED DESCRIPTION
(13) Aspects of the present disclosure relate to automatic collection, generation, and presentation of real time information to vehicular occupants. While the present disclosure is not necessarily limited to such applications, various aspects of the disclosure may be appreciated through a discussion of various examples using this context.
(14) It will be readily understood that the components of the present embodiments, as generally described and illustrated in the Figures herein, may be arranged and designed in a wide variety of different configurations. Thus, the following details description of the embodiments of the apparatus, system, method, and computer program product of the present embodiments, as presented in the Figures, is not intended to limit the scope of the embodiments, as claimed, but is merely representative of selected embodiments.
(15) Reference throughout this specification to “a select embodiment,” “at least one embodiment,” “one embodiment,” “another embodiment,” “other embodiments,” or “an embodiment” and similar language means that a particular feature, structure, or characteristic described in connection with the embodiment is included in at least one embodiment. Thus, appearances of the phrases “a select embodiment,” “at least one embodiment,” “in one embodiment,” “another embodiment,” “other embodiments,” or “an embodiment” in various places throughout this specification are not necessarily referring to the same embodiment.
(16) The illustrated embodiments will be best understood by reference to the drawings, wherein like parts are designated by like numerals throughout. The following description is intended only by way of example, and simply illustrates certain selected embodiments of devices, systems, and processes that are consistent with the embodiments as claimed herein.
(17) Many known vehicular routes experience heavy traffic conditions, varying road quality conditions, and a broad spectrum of vehicle operators and passengers with respect to experience and temperament. In addition, many areas of the world typically suffer frequent or chronic traffic congestion, thereby increasing the burden on, and accelerating the wear and tear of, the respective thoroughfares. Moreover, the burden associated with vehicular travel increases the psychological stress of the occupants, i.e., the drivers and their passengers. Therefore, the psychological disposition of the drivers and passengers play a role in the overall travel environment on the thoroughfares. However, while engaged in traffic navigation, it is typically difficult to ascertain the real time disposition of nearby drivers; therefore, it is equally difficult to anticipate the behaviors of the respective drivers. Furthermore, for those passengers that use cabs and other travel services, the potential passengers are not always knowledgeable of the driving history of the drivers for the routes and conditions that will be traversed.
(18) A system, computer program product, and method are disclosed and described herein for automatic collection, generation, and presentation of real time information to vehicular occupants, and, more specifically, to automatically and dynamically provide recommendations and insights to the passengers and operator of a vehicle while travelling therein. The terms “operator,” “operators,” “driver,” and “drivers” are used interchangeably herein. The system, computer program product, and method disclosed herein integrate artificial intelligence, machine learning features, simulation, augmented reality, and virtual reality. The system automatically considers various attributes such as

the dynamic behavior of a vehicle operator based on the respective operator's driving profile, as well as the additional inputs from the respective passenger profiles (discussed further below). Such operator profiles include the relationships with the passengers (at least partially established through the respective passenger profiles), adherence and deviations from established routes, adherence to established laws, including speed limits, vehicular accident history, and present speed of the respective vehicle. In addition, the operator profile includes context such as environmental conditions such as weather (gloomy, cloudy, rainy, hot and humid, etc.) and the road conditions. Passenger profiles include the attributes of the passengers boarded (preferred driver behaviors, required level of assistance for boarding and exiting the vehicle, preferred routes and destinations, etc.). The data associated with the above attributes are mapped to dynamically establish or change an assigned (by the system) color-coding of the vehicle through physically means mounted on the vehicle and virtually through electronic communications. The number of and frequency of the color changes are also used as inputs. Accordingly, the assigned colors are thereby presented to the passengers, the occupants (drivers and passengers) of nearby vehicles, and pedestrians to inform them of the real time disposition of the operator of the vehicle to facilitate and to take the appropriate level of caution in the vicinity thereof.

(19) In at least some embodiments, the information used to generate the assigned color-coding of the vehicles includes leveraging Internet of Things (IoT) techniques including, but not limited to, vehicle-to-vehicle (V2V) and vehicle-to-infrastructure (V2I) communication techniques. In some embodiments, the logic described herein as derived from the aforementioned context data is used to automatically adjust the distance between adjacent vehicles dynamically while in motion based on the assigned color of the vehicle, the number of vehicles in near proximity or boundary, and the adjacent vehicles' assigned color code (described further herein), the speed limit, and the real time distance between the vehicles. Moreover, in one or more embodiments, the systems described herein are configured to automatically analyze the count, frequency, and depth of potholes on the road in real time and automatically adjust the speed of the vehicle dynamically while in motion. Therefore, the system described herein facilitates providing drivers with sufficient environmental information for proposed routes to successfully navigate or avoid accident-prone areas, inclement weather conditions, poor road conditions, and construction areas through alerts and suggestions to the drivers with respect to best routes and appropriate speeds for the selected routes. Accordingly, the system described herein facilitates proactively preparing the driver and passengers onboard with the expected driving experience, including potential issues that may arise, to provide substantially seamless onboarding, driving, and offboarding experiences.

(20) Furthermore, in at least some embodiments, the systems described herein generate a score card for the operator of the vehicle. In some embodiments, the system is configured to qualify or disqualify a driver for a particular ride if the system identifies that the profiled driver cannot adhere to derived/recommended speeds, or would otherwise likely exceed a potential passenger's parameters for a satisfactory transport experience, at least partially based on the established operator's and passenger's profiles. Also, in some embodiments, the system described herein scores and ranks the prospective operator and vehicle, thereby providing a choice of selection to the passengers. Conversely, in similar embodiments, the system is configured to provide information on prospective passengers to facilitate a choice of passengers to the operators. Accordingly, the system, computer program product, and method described herein facilitate matching operators and passengers for improving the transport experience.

(21) In at least some embodiments, the system, computer program product, and method described herein use an artificial intelligence platform. “Artificial Intelligence” (AI) is one example of cognitive systems that relate to the field of computer science directed at computers and computer behavior as related to humans and man-made and natural systems. Cognitive computing utilizes self-teaching algorithms that use, for example, and without limitation, data analysis, visual recognition, behavioral monitoring, and natural language processing (NLP) to solve problems and

optimize human processes. The data analysis and behavioral monitoring features analyze the collected relevant data and behaviors as subject matter data as received from the sources as discussed herein. As the subject matter data is received, organized, and stored, the data analysis and behavioral monitoring features analyze the data and behaviors to determine the relevant details through computational analytical tools which allow the associated systems to learn, analyze, and understand human behavior, including within the context of the present disclosure. With such an understanding, the AI can surface concepts and categories, and apply the acquired knowledge to teach the AI platform the relevant portions of the received data and behaviors. In addition to analyzing human behaviors and data, the AI platform may also be taught to analyze data and behaviors of man-made and natural systems.

(22) In addition, cognitive systems such as AI, based on information, are able to make decisions, which maximizes the chance of success in a given topic. More specifically, AI is able to learn from a dataset, including behavioral data, to solve problems and provide relevant recommendations. For example, in the field of artificial intelligent computer systems, machine learning (ML) systems process large volumes of data, seemingly related or unrelated, where the ML systems may be trained with data derived from a database or corpus of knowledge, as well as recorded behavioral data. The ML systems look for, and determine, patterns, or lack thereof, in the data, “learn” from the patterns in the data, and ultimately accomplish tasks without being given specific instructions. In addition, the ML systems, utilizes algorithms, represented as machine processable models, to learn from the data and create foresights based on this data. More specifically, ML is the application of AI, such as, and without limitation, through creation of neural networks that can demonstrate learning behavior by performing tasks that are not explicitly programmed. Deep learning is a type of neural-network ML in which systems can accomplish complex tasks by using multiple layers of choices based on output of a previous layer, creating increasingly smarter and more abstract conclusions.

(23) ML learning systems may have different “learning styles.” One such learning style is supervised learning, where the data is labeled to train the ML system through telling the ML system what the key characteristics of a thing are with respect to its features, and what that thing actually is. If the thing is an object or a condition, the training process is called classification. Supervised learning includes determining a difference between generated predictions of the classification labels and the actual labels, and then minimize that difference. If the thing is a number, the training process is called regression. Accordingly, supervised learning specializes in predicting the future.

(24) A second learning style is unsupervised learning, where commonalities and patterns in the input data are determined by the ML system through little to no assistance by humans. Most unsupervised learning focuses on clustering, i.e., grouping the data by some set of characteristics or features. These may be the same features used in supervised learning, although unsupervised learning typically does not use labeled data. Accordingly, unsupervised learning may be used to find outliers and anomalies in a dataset, and cluster the data into several categories based on the discovered features.

(25) Semi-supervised learning is a hybrid of supervised and unsupervised learning that includes using labeled as well as unlabeled data to perform certain learning tasks. Semi-supervised learning permits harnessing the large amounts of unlabeled data available in many use cases in combination with typically smaller sets of labelled data. Semi-supervised classification methods are particularly relevant to scenarios where labelled data is scarce. In those cases, it may be difficult to construct a reliable classifier through either supervised or unsupervised training. This situation occurs in application domains where labelled data is expensive or difficult obtain, like computer-aided diagnosis, drug discovery and part-of-speech tagging. If sufficient unlabeled data is available and under certain assumptions about the distribution of the data, the unlabeled data can help in the construction of a better classifier through classifying unlabeled data as accurately as possible based on the documents that are already labeled.

(26) The third learning style is reinforcement learning, where positive behavior is “rewarded: and negative behavior is “punished.” Reinforcement learning uses an “agent,” the agent's environment, a way for the agent to interact with the environment, and a way for the agent to receive feedback with respect to its actions within the environment. An agent may be anything that can perceive its environment through sensors and act upon that environment through actuators. Therefore, reinforcement learning rewards or punishes the ML system agent to teach the ML system how to most appropriately respond to certain stimuli or environments. Accordingly, over time, this behavior reinforcement facilitates determining the optimal behavior for a particular environment or situation.

(27) Deep learning is a method of machine learning that incorporates neural networks in successive layers to learn from data in an iterative manner. Neural networks are models of the way the nervous system operates. Basic units are referred to as neurons, which are typically organized into layers. The neural network works by simulating a large number of interconnected processing devices that resemble abstract versions of neurons. There are typically three parts in a neural network, including an input layer, with units representing input fields, one or more hidden layers, and an output layer, with a unit or units representing target field(s). The units are connected with varying connection strengths or weights. Input data are presented to the first layer, and values are propagated from each neuron to every neuron in the next layer. At a basic level, each layer of the neural network includes one or more operators or functions operatively coupled to output and input. Output from the operator(s) or function(s) of the last hidden layer is referred to herein as activations. Eventually, a result is delivered from the output layers. Deep learning complex neural networks are designed to emulate how the human brain works, so computers can be trained to support poorly defined abstractions and problems. Therefore, deep learning is used to predict an output given a set of inputs, and either supervised learning or unsupervised learning can be used to facilitate such results.

(28) Referring to FIG. **1**A, a schematic diagram is provided illustrating a computer system **100**, that in the embodiments described herein, is a vehicular information system **100**, herein referred to as the system **100**. As described further herein, system **100** is configured for automatic collection, generation, and presentation of real time information to vehicular occupants. In at least one embodiment, the system **100** includes one or more automated machine learning (ML) system features to leverage a trained cognitive system to automatically and dynamically provide recommendations and insights to the passengers and operator of a vehicle while travelling therein. In at least one embodiment, the system **300** is embodied as a cognitive system, i.e., an artificial intelligence (AI) platform computing system that includes an artificial intelligence platform **150** suitable for establishing the environment to facilitate the collection, generation, and presentation of real time information to vehicular occupants.

(29) As shown, a server **110** is provided in communication with a plurality of information handling devices **180** (sometimes referred to as information handling systems, computing devices, and computing systems) across a computer network connection **105**. The computer network connection **105** may include several information handling devices **180**. Types of information handling devices that can utilize the system **100** range from small handheld devices, such as a handheld computer/mobile telephone **180-1** to large mainframe systems, such as a mainframe computer **180-2**. Additional examples of information handling devices include personal digital assistants (PDAs), personal entertainment devices, pen or tablet computer **180-3**, laptop or notebook computer **180-4**, personal computer system **180-5**, server **180-6**, and one or more Internet of Things (IoT) devices **180-7**, that in at least some embodiments, include connected cameras and environmental sensors. As shown, the various information handling devices, collectively referred to as the information handling devices **180**, are networked together using the computer network connection **105**.

(30) Various types of a computer networks can be used to interconnect the various information handling systems, including Local Area Networks (LANs), Wireless Local Area Networks

(WLANs), the Internet, the Public Switched Telephone Network (PSTN), other wireless networks, and any other network topology that can be used to interconnect information handling systems and computing devices as described herein. In at least some embodiments, at least a portion of the network topology includes cloud-based features. Many of the information handling devices **180** include non-volatile data stores, such as hard drives and/or non-volatile memory. Some of the information handling devices **180** may use separate non-volatile data stores, e.g., server **180-6** utilizes non-volatile data store **180-6**A, and mainframe computer **180-2** utilizes non-volatile data store **180-2**A. The non-volatile data store **180-2**A can be a component that is external to the various information handling devices **180** or can be internal to one of the information handling devices **180**.

(31) The server **110** is configured with a processing device **112** in communication with memory device **116** across a bus **114**. The server **110** is shown with the artificial intelligence (AI) platform **150** for cognitive computing, including machine learning, over the computer network connection **105** from one or more of the information handling devices **180**. More specifically, the information handling devices **180** communicate with each other and with other devices or components via one or more wired and/or wireless data communication links, where each communication link may comprise one or more of wires, routers, switches, transmitters, receivers, or the like. In this networked arrangement, the server **110** and the computer network connection **405** enable communication, detection, recognition, and resolution. The server **110** is in operable communication with the computer network through communications links **102** and **104**. Links **102** and **104** may be wired or wireless. Other embodiments of the server **110** may be used with components, systems, sub-systems, and/or devices other than those that are depicted herein.

(32) The AI platform **150** is shown herein configured with tools to enable automatic collection, generation, and presentation of real time information to vehicular occupants. More specifically, the AI platform **150** is configured for leveraging a trained cognitive system to automatically and dynamically provide recommendations and insights to the passengers and operator of a vehicle while travelling therein. In one embodiment, one or more high-fidelity machine learning (ML) models of the vehicle operators (drivers), the passengers, and the routes is resident within the AI platform **150**. Herein, the terms “model” and “models” includes “one or more models.” Therefore, as a portion of data ingestion by the model, data resident within a knowledge base **170** is injected into the model as described in more detail herein. Accordingly, the AI platform **150** includes a learning-based mechanism that can facilitate training of the model with respect to the drivers, passengers, and routes to facilitate an effective vehicular information system **100**.

(33) The tools embedded within the AI platform **150** as shown and described herein include, but are not limited to, a transport information manager **152** that is described further with respect to FIG. **1**B. Referring to FIG. **1**B, a block schematic diagram is provided illustrating the AI platform **150** shown in FIG. **1**A with greater detail, in accordance with some embodiments of the present disclosure. Continuing to also refer to FIG. **1**A, and continuing the numbering sequence thereof, the transport information manager **152** includes a vehicle occupant profiling engine **154** with a passenger profiling module **156** and a driver profiling module **158** embedded therein. The transport information manager **152** also includes a route augmentation and simulation engine **160** and a route condition analysis sub-module **162**. The transport information manager **152** further includes a modeling engine **164** and an embedded models module **166** that includes, without limitation, the models resident therein. The transport information manager **152** also includes a vehicle positioning engine **168** and an historical comparisons engine **169**. The transport information manager **152**, vehicle occupant profiling engine **154**, passenger profiling module **156**, driver profiling module **158**, route augmentation and simulation engine **160**, route condition analysis module **162**, modeling engine **164**, models module **166**, vehicle positioning engine **168**, and historical comparisons engine **169** are described further herein with respect to FIGS. **3-4**B. In some embodiments, the AI platform **150** includes one or more supplemental managers M (only one shown) and one or more

supplemental engines N (only one shown) that are employed for any supplemental functionality in addition to the functionality described herein. The one or more supplemental managers M and the one or more supplemental engines N include any number of modules embedded therein to enable the functionality of the respective managers M and engines N.

(34) Referring again to FIG. **1**A, the AI platform **150** may receive input from the computer network connection **105** and leverage the knowledge base **170**, also referred to herein as a data source, to selectively access training and other data. The knowledge base **170** is communicatively and operably coupled to the server **110** including the processing device **112** and/or memory **116**. In at least one embodiment, the knowledge base **170** may be directly communicatively and operably coupled to the server **110**. In some embodiments, the knowledge base **170** is communicatively and operably coupled to the server **110** across the computer network connection **105**. In at least one embodiment, the knowledge base **170** includes a data corpus **171** that in some embodiments, is referred to as a data repository, a data library, and knowledge corpus, that may be in the form of one or more databases. The data corpus **171** is described further with respect to FIG. **1**C.

(35) Referring to FIG. **1**C, a block schematic diagram is presented illustrating the data corpus **171** shown in FIG. **1**A with greater detail, in accordance with some embodiments of the present disclosure. Continuing to also refer to FIG. **1**A, and continuing the numbering sequence thereof, the data corpus **171** includes different databases, including, but not limited to, a historical database **172** that includes, without limitation, historical color changes for drivers data **173**, historical route adherence data **174**, drivers' historical driving records **175**, passengers' historical records **176**, historical weather conditions data **177**, historical traffic conditions data **178**, historical road conditions data **179**, known geographic and environmental attributes **181**, and a drivers' color-coding scheme **183**. The respective databases and the resident data therein are described further herein with respect to FIGS. **3-4**B. Accordingly, the server **110**, including the AI platform **150** and the transport information manager **152**, receive information through the computer network connection **105** from the devices connected thereto and the knowledge base **170**.

(36) Referring again to FIG. **1**A, a response output **132** includes, for example, and without limitation, output generated in response to a query of the data corpus **171** that may include some combination of the datasets resident therein. Further details of the information displayed is described with respect to FIGS. **3-4**B.

(37) In at least one embodiment, the response output **132** is communicated to a corresponding network device, shown herein as a visual display **130**, communicatively and operably coupled to the server **110** or in at least one other embodiment, operatively coupled to one or more of the computing devices across the computer network connection **105**.

(38) The computer network connection **105** may include local network connections and remote connections in various embodiments, such that the artificial intelligence platform **150** may operate in environments of any size, including local and global, e.g., the Internet. Additionally, the AI platform **150** serves as a front-end system that can make available a variety of knowledge extracted from or represented in network accessible sources and/or structured data sources. In this manner, some processes populate the AI platform **150**, with the AI platform **150** also including one or more input interfaces or portals to receive requests and respond accordingly.

(39) Referring to FIG. **2**, a block schematic diagram **200** is provided illustrating one or more artificial intelligence platform tools, as shown and described with respect to FIG. **1**, and their associated application program interfaces, in accordance with some embodiments of the present disclosure. An application program interface (API) is understood in the art as a software intermediary, e.g., invocation protocol, between two or more applications which may run on one or more computing environments. As shown, a tool is embedded within the AI platform **250** (shown and described in FIGS. **1**A and **1**B as the AI platform **150**), one or more APIs may be utilized to support one or more of the tools therein, including the transport information manager **252** (shown and described as transport information manager **152** with respect to FIGS. **1**A and **1**B) and its

associated functionality. Accordingly, the AI platform **250** includes the tool including, but not limited to, the transport information manager **252** associated with an API.sub.0 **212**.

(40) The API.sub.0 **212** may be implemented in one or more languages and interface specifications. API.sub.0 **212** provides functional support for, without limitation, the transport information manager **252** that is configured to facilitate execution of one or more operations by the server **110** (shown in FIG. **1**A). Such operations include, without limitation, collecting, storing, and recalling the data stored within the data corpus **171** as discussed herein, and providing data management and transmission features not provided by any other managers or tools (not shown). Accordingly, the transport information manager **252** is configured to facilitate building, storing, and managing the data in the data corpus **171** including, without limitation, joining of the data resident therein.

(41) In at least some embodiments, the components, i.e., the additional support tools, embedded within the transport information manager **152**, including, without limitation, and referring to FIGS. **1**A and **1**B, the vehicle occupant profiling engine **154** (including the embedded passenger profiling module **156** and the driver profiling module **158**), the route augmentation and simulation engine **160** (including the embedded route condition analysis module **162**), the modeling engine **164** (including the models module **166**), the vehicle positioning engine **168**, and the historical comparisons engine **169**, and the functionality thereof (as described further herein with respect to FIGS. **3-4**B) are also implemented through an API. Specifically, the driver/passenger profiling engine **254** is associated with an API.sub.1 **214**, the route augmentation and simulation engine **260** is associated with an API.sub.2 **216**, the modeling engine **264** is associated with an API.sub.3 **218**, the vehicle positioning engine **268** is associated with an API.sub.4 **220**, and the historical comparisons engine **269** is associated with an APIs **222**. Accordingly, the APIs API.sub.0 **212** through APIs **222** provide functional support for the operation of the transport information manager **152** through the respective embedded tools.

(42) In some embodiments, as described for FIG. **1**A, the AI platform **150** includes one or more supplemental managers M (only one shown) and one or more supplemental engines N (only one shown) that are employed for any supplemental functionality in addition to the functionality described herein. Accordingly, the one or more supplemental managers M are associated with one or more APIs.sub.M **224** (only one shown) and the one or more supplemental engines N are associated with one or more APIs.sub.N **226** (only one shown) to provide functional support for the operation of the one or more supplemental managers M through the respective embedded tools.

(43) As shown, the APIs API.sub.0 **212** though API.sub.N **226** are operatively coupled to an API orchestrator **270**, otherwise known as an orchestration layer, which is understood in the art to function as an abstraction layer to transparently thread together the separate APIs. In at least one embodiment, the functionality of the APIs API.sub.0 **212** though API.sub.N **226**, and any additional APIs, may be joined or combined. As such, the configuration of the APIs API.sub.0 **212** through API.sub.N **226** shown herein should not be considered limiting. Accordingly, as shown herein, the functionality of the tools may be embodied or supported by their respective APIs API.sub.0 **212** through API.sub.N **226**.

(44) Referring to FIG. **3**, a schematic diagram is presented illustrating the system **300** (shown as system **100** with respect to FIGS. **1**A-**1**C) in a plurality of scenarios **310** that an operator of a commercial transport vehicle **360** will typically encounter, in accordance with some embodiments of the present disclosure. In some embodiments, the commercial transport vehicle **360** is a transport service such as a ridesharing service, taxi service (complementary or fee-based), or a bus service and the transport vehicle **360** is any type, make, and model that enables operation of the transport vehicle **360** as described herein.

(45) The AI platform **350** is communicatively and operably coupled to the cloud **306** through the computer network **305** (see computer network **105** in FIG. **1**A). The scenarios **310** include a thoroughfare **320**. The thoroughfare **320**, in some embodiments, is one of a city or suburban street and a city, suburban, rural, interstate, or interprovince highway. In some embodiments, the

thoroughfare **320** includes a sidewalk **322**, a pedestrian crosswalk **324**, a center median **326**, three lanes **328**, **330**, and **332** (where three is non-limiting), and a street light **334**. In some embodiments, more or less of the aforementioned elements are contemplated by system **300**, such as two lanes, two sidewalks, four lanes, etc. In some embodiments, the scenario also includes pedestrians **336**, that further include potential passengers **338**. In some embodiments of the system **300**, vehicle occupant profiling engine **154** is expanded to a "user profiling engine" that also includes additional users, such as, and without limitation, the pedestrians **336**, where a "pedestrian" (or "other user") module is added to the user profiling engine and the potential passengers **338** are integrated into the passenger profiling module **156**.

(46) In some embodiments, the scenario **302** includes a plurality of vehicles, e.g., and without limitation, private automobiles **340**, automotive trucks **342**, and the transport vehicle **360**. As shown, the scenario is city traffic. Other traffic scenarios include, without limitation, traffic congestion and relatively light rural highway traffic. In some embodiments, the plurality vehicles include bicycles, motorcycles, scooters, and the like (none shown). The scenario **302** also includes road hazards, such as, and without limitation, potholes **370**. In some embodiments, such hazards include construction barriers, vehicular accidents, emergency responders, wet or icy roads, and the like (none shown). At least some embodiments include sunny and clear weather **380**, some embodiments include inclement weather **382** (rain, snow, wind, ice, etc.), and some embodiments include night conditions **384** (street lamps, unlighted conditions, roving wild life (deer), etc.). In the embodiment illustrated in FIG. **3**, all of the operators, passengers, pedestrians **336**, and potential passengers **338** have access to the system **300**.

(47) In one or more embodiments, the operators and passengers of the private automobiles **340**, the automotive trucks **342**, and the transport vehicle **360** are in communication through the system **300** vit IoT techniques, such as, and without limitation, vehicle-to-vehicle (V2V) and vehicle-to-infrastructure (V2I) communication that utilize the IoT devices **180-7** (shown in FIG. **1**A). Information that is communicated between the commercial transport vehicle **360** and the other vehicles **340** and **342** includes, without limitation, present speeds and positions with respect to each other, assigned color codes (discussed further herein), anticipated lane changes, expected up-coming stops, and the like. For clarity, only the transport vehicle **360** is shown with IoT transmissions **362**; therefore, the IoT signals received by the commercial transport vehicle **360** are not shown. In some embodiments, the commercial transport vehicle **360** is also configured to transmit and receive signals in the radio frequency (RF) band, as well as any other band the enables operation of the system **300** as described herein. The transport vehicle **360** includes a color indicating device **364** to advertise the present disposition of the driver thereof through a color coding scheme, where the color indicating device **364** and the color coding scheme are discussed further herein. The private automobiles **340** and the automotive trucks **342** will also include color indicating devices similar to the color indicating device **364**.

(48) The system **300** as described herein is configured to leverage augmented intelligence capabilities to automatically consider the various attributes of the operator of the commercial transport vehicle **360**. Such attributes will include, for example, and without limitation, the historical and present dynamic behavior of the operator with respect to automobile operation based on his respective profile. Another such attribute includes historical customer relationships and interactions. Both of the aforementioned attributes are at least partially measured as a function of driving along the most proper route without excessive or extensive unwarranted deviations (from the perspective of the passengers), where the system **300** automatically determines the best routes and times to reach the destination, and reports such to the driver and the passengers. Additional data collected to define the operator attributes include, without limitation, the profiles of the passengers boarded, traffic accidents, infractions, or violations incurred within a specific context, that may be coupled with environmental attributes, such as, without limitation, weather conditions adverse to driving (gloomy, cloudy, rainy, hot, humid etc.) and the road conditions to map the

above attributes appropriately and dynamically.

(49) In one or more embodiments, and as described further herein, the operator profile of a particular driver will determine the assigned color of the color indicating device **364** prominently displayed on the commercial transport vehicle **360**. In some embodiments, the color indicating device **364** includes one or more devices **364** on the commercial transport vehicle **360** that provide, substantially, 360-degree indication of the assigned color code. Such devices **364** will include, without limitation, one or more of light emitting diode (LED) lamps. In addition, for those devices that provide an icon or other virtual representation of the commercial transport vehicle **360**, the assigned color of the vehicle **360** will be changed substantially simultaneously with that of the color indicating device **364**. The colors displayed are substantially based on the historical operator profile for historical road conditions, traffic conditions, and weather conditions, the driver's near-term driving performance (e.g., present speed), the present road conditions, and the present weather conditions. When provided with the aforementioned data, the machine learning algorithms and techniques, in conjunction with the artificial intelligence features, of the system **300** either maintains or adjusts the assigned color-coding of the particular operator and transmit the determined color assignment to the operator, the passengers, pedestrians, and proximate vehicles along the route.

(50) In many of the embodiments described herein, at least a portion of the inputs into the system **300** through the devices and mechanisms described with respect to FIG. **1**A through the computer network **305**, including the cloud **306**, includes, without limitation, real time weather conditions, real time traffic conditions, real time road conditions, driver's real time dynamic behavior, occupants' real time dynamic behavior, non-occupants' real time dynamic behavior, other vehicles' real time dynamic behavior, and emergent geographic/environmental data. At least some of the outputs of the system **300** include, without limitation, drivers' color assignments, route specifics, driver qualification/disqualification, drivers' rankings, and vehicle status/alerts.

(51) In some embodiments, the real time weather conditions (including the time of day with respect to the available natural daylight) are captured from one or more localized weather reporting sources, for example, and without limitation, radio stations, weather services, departments of transportation, etc., including those transmitted directly to the system **300** from other drivers in the vicinity of the selected route. Such weather conditions include, without limitation, sunny and clear weather **380**, inclement weather **382** (rain, snow, wind, ice, etc.), and night conditions **384** (street lamps, unlighted conditions, roving wild life (deer), etc.). In some embodiments, the real time weather conditions data is processed through the route condition analysis module **162** embedded within the route augmentation and simulation engine **160**. Accordingly, real time weather conditions that will affect the behavior of the operator is captured and processed to at least partially define a driver profile and an enhanced route presentation (discussed further herein).

(52) In addition, real time road conditions such as potholes **370**, construction delays, vehicular accidents, and wet or icy roads may be captured through the system **300** from one or more localized traffic reporting sources, for example, and without limitation, radio stations, traffic services, departments of transportation, etc., including those transmitted directly to the system **300** from other drivers in the vicinity of the selected route. In some embodiments, the real time road conditions data is processed through the route condition analysis module **162** embedded within the route augmentation and simulation engine **160**, where the real time road conditions are at least partially associated with the real time weather conditions. Accordingly, real time road conditions data that will affect the behavior of the operator is captured and processed to at least partially define the driver profile and the enhanced route presentation (discussed further herein).

(53) In addition, real time traffic conditions (city and interstate congestion versus light traffic conditions) may be captured through the system **300** based on the number, proximity (including relative adjacency), and assigned color coding of vehicles **340** and **342**, as well as motorcycles, bicycles, and pedestrians, including relative vehicular/pedestrian density. In some embodiments,

the real time traffic conditions are captured from one or more localized traffic reporting sources, for example, and without limitation, radio stations, traffic services, departments of transportation, etc., including those transmitted directly to the system **300** from other drivers in the vicinity of the selected route. In some embodiments, the real time traffic conditions data is processed through the route condition analysis module **162** embedded within the route augmentation and simulation engine **160**, where the real time traffic conditions are at least partially associated with the real time weather conditions and the real time road conditions. Accordingly, real time traffic conditions data that will affect the behavior of the operator is captured and processed to at least partially define the driver profile and the enhanced route presentation (discussed further herein).

(54) In some embodiments, the driver's real time dynamic behavior is captured directly from the driver and sensors (not shown) emanating the IoT transmissions **362** on the commercial transport vehicle **360**, as well as inputs from the passengers in the commercial transport vehicle **360**, the nearby vehicles **340** and **342**, the pedestrians **336**, and the potential passengers **338**. For example, a non-exhaustive list of such operator-related data includes vehicle speed statistics (average, maximum, etc.) and the near-term frequency of the assigned color changes on the color indicating device **364**. In some embodiments, the driver profile is generated through the driver profiling module **158** embedded in the vehicle occupant profiling engine **154**.

(55) In some embodiments, the occupants' (passengers) real time dynamic behavior include direct observations with respect to the operator's driving behavior, and feelings of comfort and safety within the commercial transport vehicle **360**. In some embodiments, the non-occupants' real time dynamic behaviors include, without limitation, direct observations with respect to the operator's driving behavior and feelings of safety within the vicinity of the commercial transport vehicle **360**. In some embodiments, the passengers' and non-occupants' profiles are generated through the passenger profiling module **156** embedded within the vehicle occupant profiling engine **154**. In some embodiments, the occupants, pedestrians **336**, and the potential passengers **338** are in communication with the system **300** through one or more of the devices such as, and without limitation, mobile phone **180-1** and tablet **194** (both shown in FIG. **1**A).

(56) In some embodiments, the other vehicles' real time dynamic behavior is collected by the system **300** through sensors and IoT devices on the vehicles that are similar to those on the commercial transport vehicle **360**, as well as direct reports from the other drivers and other passengers. In some embodiments, is communicated through V2V and V2I communications that utilize the IoT devices **180-7** (shown in FIG. **1**A). The real time dynamic behavior data of the other vehicles is processed through the route condition analysis module **162** embedded within the route augmentation and simulation engine **160**, where the real time dynamic behavior data of the other vehicles is at least partially associated with the real time road conditions. Accordingly, real time dynamic behavior data of the other vehicles that will affect the behavior of the operator is captured and processed to at least partially define the driver profile and the enhanced route presentation (discussed further herein).

(57) In some embodiments, the real time emergent geographic/environmental data includes, without limitation, emergent road hazards, such as newly reported potholes **370**, construction barriers, vehicular accidents, and presence of emergency responders. In some embodiments, the real time emergent geographic/environmental data is processed through the route condition analysis module **162** embedded within the route augmentation and simulation engine **160**, where the real time emergent geographic/environmental data are at least partially associated with the real time road conditions. Accordingly, real time emergent geographic/environmental data that will affect the behavior of the operator is captured and processed to at least partially define the driver profile and the enhanced route presentation (discussed further herein).

(58) Accordingly, ns one or more embodiments, the operator's real time behavior is correlated to the totality of the real time conditions to establish the driver's profile in real time with the appropriate context to establish the assigned color indication from the color indicating device **364**.

(59) In some embodiments, and also referring to FIG. **1**C, the driver's profile is established through one or more of sources of data from the historical database **172** (see FIG. **1**C). In some embodiments, such historical data includes historical color changes for drivers data **173** for that particular driver as well as the percentage of time where each of the colors are illuminated on the color indicating device **364**. In some embodiments, the driver's historical route adherence data **174** is used to determine if the driver is prone to avoid certain areas due to traffic, weather, or road conditions and take short deviations from an established route, or is prone to divergent routing that extends the transport time of the passengers without reasonable explanation. In some embodiments, the historical color change for drivers data **173** and historical route adherence data **174** are used to establish the drivers' historical driving records **175**. In some embodiments, the drivers' historical driving records **175** includes, for example, and without limitation, on-time delivery statistics, lane changing frequencies and circumstances, passenger satisfaction surveys, and the like. In some embodiments, the drivers' historical driving records **175** are used to generate the driver profile through the driver profiling module **158** embedded in the vehicle occupant profiling engine **154**. In some embodiments, in addition to evaluating the driver for identical routes the driver has traversed, the system **300** uses similar routes (i.e., routes with similar attributes with respect to weather, traffic, and road conditions) to determine the driver's profile.
(60) In addition, in some embodiments, the historical records **176** of the passengers are used to establish historical patterns of the passengers with respect to the type of trips taken, particular preferences for drivers (aggressive versus non-aggressive drivers, preferred speed limits, air conditioning settings), particular requirements of the passengers (e.g., without limitation, aid required for onboarding/entry to the vehicle and for exiting the vehicle, presence of small children, pregnant passengers, susceptible to motion sickness/nausea), and any other data that facilitates better matching of certain operators with certain passengers to provide a more satisfying experience for both. In some embodiments, the historical records **176** of the passengers are used to generate the vehicle occupant profiles through the passenger profiling module **156** embedded in the vehicle occupant profiling engine **154**.
(61) In some embodiments, the historical weather conditions data **177**, historical traffic conditions data **178**, historical road conditions data **179**, and the known geographic and environmental attributes **181** are mapped to the particular driver's behaviors at least temporally and geographically to provide context for the driver's behavior and the respective color selections. In some embodiments, the data associated with the historical weather conditions data **177**, historical traffic conditions data **178**, historical road conditions data **179**, and the known geographic and environmental attributes **181** is processed through the route condition analysis module **162** embedded within the route augmentation and simulation engine **160** to at least partially define the driver profile and the enhanced route presentation. In some embodiments, the historical data is used to train the models resident within the models module **166** through the modeling engine **164** (see FIG. **1**B). Accordingly, the historical data facilitates determining the driver's historical profile with the appropriate context and is used to train the integrated model of the routes, the drivers, and the passengers.
(62) In one or more embodiments, the route augmentation and simulation engine **160** is configured to generate augmented visual representations of the route on a windshield display that enhances the actual real world images with virtual objects generated through the engine **160** in conjunction with the trained model resident within the models module **166**. The generated virtual objects are created through one or more of simulation, augmented reality, and virtual reality techniques. The inputs to the route augmentation and simulation engine **160** include, without limitation, the real time traffic conditions data, the real time dynamic behavior data of the other vehicles, the real time weather conditions data, and the data associated with the historical weather conditions data **177**, historical traffic conditions data **178**, historical road conditions data **179**, and the known geographic and environmental attributes **181**. In some embodiments, at least a portion of the aforementioned data is

in video form that can be analyzed and used, at least partially, to create the computer-generated augmentations and simulations. In some embodiments, AI techniques such as, and without limitation, the Markov Decision Process (MDP) and decision tree algorithms. Accordingly, the route augmentation and simulation engine **160** is configured to augment the visual real world portions of the route as the operator of the commercial transport vehicle **360** traverses the established route. Such augmentation includes, without, limitation, pedestrians, other vehicles, and approaching hazards, e.g., potholes **370** that may otherwise not be visible to the operator.

(63) In some embodiments, the drivers' color-coding scheme **183** is stored in the historical database **172**. In at least some embodiments, the color coding schemes are each established based on geographic parameters that are at least partially based on the particular (and, in some cases, unique) traffic, weather, and road conditions in that particular geographic area through establishment, e.g., of a geo-fence. The color coding scheme includes assigning colors to an operator of a vehicle subject to particular criteria. For example, an operator of a vehicle that rarely deviates from the predetermined route and drives defensively will obtain a different color coding from an operator of a vehicle that tends to violate posted speed limits and takes route deviations that are at least discomforting to the passengers. One color coding scheme that is used in some embodiments includes “red” to identify the operator as potentially unsafe for the given traffic, weather, and road conditions, therefore some additional distance should be granted between the commercial transport vehicle **360** and adjacent vehicles, and potential passengers may be dissuaded from using that particular driver, especially if such potential passengers have indicated that they prefer less risky travel experiences. The same color coding scheme will also include “yellow” or “amber” to indicate that the operator, for the given conditions, is less risky and that caution should be taken. In addition, the color coding scheme includes “green” to indicate that the operator will most likely meet or exceed the potential passengers' expectations and that proximate drivers should extend the typical level of caution toward the commercial transport vehicle **360**. Additional color codes may be used for vehicles in distress, e.g., purple. In other embodiments, any color scheme that enables operation of the system **300** as described herein is used. Accordingly, the vehicular occupants of the system **300** are provided insights into the prospective forthcoming travel and real time insights during the travel along the route.

(64) In at least some embodiments, the system **300** includes a vehicle positioning engine **168** (see FIG. **1**B) that is configured to automatically position the commercial transport vehicle **360**, including, without limitation, automatically adjusting the distance between adjacent vehicles based on the assigned color code. For example, and without limitation, a rule-of-thumb in the United States for maintaining a distance between vehicles is approximately 10 feet (approximately 3.05 meters) for every 10 miles-per-hour (16.1 kilometers-per-hour). That rule-of-thumb will be suggested for an operator of the commercial transport vehicle **360** that is presently operating with the color indicating device **364** indicating green. For a yellow indication, a reasonable difference may be 10% to 25% greater, and for a red indication, a 50% to 100% greater distance may be suggested. Therefore, under certain circumstances, such as the presently assigned color of the car, the number of vehicles in near proximity, the adjacent vehicles' assigned color codes (also generated by the system **300**), the speed limit for the present portion of the route, and the measured distance between the vehicles, the vehicle positioning engine **168** will suggest to the operator to allow the system **300** to adjust the distance between vehicles to the suggested distances and to adjust the speed of the commercial transport vehicle **360**. The adjacent vehicles will communicate with each other through the V2V and V2I techniques. In some embodiments, the vehicle positioning engine **168** will notify the operator that it has assumed control, where the operator has the option to resume control through one or more of the vehicle attaining operating values within established parameters or through the operator re-establishing control of the vehicle through a mechanism such as a spoken password. In some embodiments, in addition to controlling the distance between the vehicles in the front and back of the commercial transport vehicle **360**, the

vehicle positioning engine **168** will also attempt to maintain an appropriate spacing between laterally adjacent vehicles. In some embodiments, the V2V and V2I techniques facilitate the adjacent vehicles cooperating with each other to establish the predetermined distances therebetween and the respective speeds.

(65) In one or more embodiments, the system **300** is configured to determine the extent of a pothole **370** population along the determined route. Specifically, aspects of the pothole **370** population that are determined through the route condition analysis module **162** embedded in the route augmentation and simulation engine **160** of the AI platform **150** include, without limitation, the pothole **370** count, frequency, and depth. Such information is extracted from the traffic and road condition sources previously described herein. In some embodiments, annunciation features of the system **300** (not shown) are used to warn the operator and passengers of the approaching potholes **370**. In some embodiments, virtual representations of the potholes **370** are presented to the operator (and the passengers) on an augmented windshield. In some embodiments, the pothole **370** determinations will change the assigned color of the color indicating device **364**, for example, from green to yellow, to indicate to other vehicles **340** and **342** that more caution should be exercised with respect to proximity to the commercial transport vehicle **360**. In some embodiments, due to the severity of the potholes **370**, the color indicating device **364**, for example, may shift from green or yellow to red. In some embodiments, the severity of the potholes **370** are substantial enough to warrant exercising the vehicle positioning engine **168** to automatically adjust the speed and inter-vehicular distance as previously discussed. Accordingly, the system **300** is configured to provide the operators and passengers of vehicles prior notification of potential obstacles, e.g., potholes **370** that will be experienced through the route, thereby at least partially setting the passengers' expectations for the ride.

(66) In some embodiments, the system **300** is configured to automatically change the indicated color of the color indicating device **364** from green to yellow when the commercial transport vehicle **360** is entering a school zone where heightened caution is warranted and will be advertised to the proximate other vehicles **340** and **342** and pedestrians **336**. The color is shifted from yellow to green once the school zone is exited. In some embodiments, the vehicle positioning engine **168** will automatically adjust the speed of the commercial transport vehicle **360** through the engine speed and brakes thereof as the school zone is approached and exited. In addition, the system **300** is configured to automatically adjust the indicated color of the color indicating device **364** when the environmental conditions about the commercial transport vehicle **360** are changing from one weather pattern to another, where the operators performance is sensitive to the weather, traffic, and road conditions.

(67) In some embodiments, the system **300** is configured to quality and disqualify particular operators for certain rides and routes that are established through the model to change the indicated color as a function of the combination of the weather conditions, traffic conditions, road conditions, the passenger profiles, and the driver profiles established as previously described. For example, and without limitation, the previously described color coding scheme of green-yellow-red will be used to rate and rank the performance of the operators as a function of the respective driver profiles. The color coding scheme is used for an overall rating and ranking of the operators' performance as well as more granular assessments with respect to their performance in the various weather, traffic, and road conditions. For example, a particular potential passenger **348** will prefer a driver with green indications for on-time delivery and yellow for the current weather/traffic/road conditions over another driver that has a yellow indication for on-time delivery and green for the present conditions. Such preferences are individually determined by the respective passengers subject to the individual sensitivities of each passenger and are stored in the passengers' historical records **176**. In some embodiments, without limitation, the operators will have numerical rankings assigned through a predetermined ranking process, and each individual potential passenger **338** has an option to designate passenger-defined thresholds for particular aspects of the operators'

performance. Accordingly, the system **300** is configured to qualify particular operators for particular potential passengers **338** and to disqualify other operators for the same routes and current weather/traffic/road conditions.

(68) In some embodiments, the system **300** is configured to dynamically provide recommendations throughout the transport of the passengers along the route from the initial selection of the commercial transport vehicle **360** to the safe delivery of the passengers to their destinations. For example, without limitation, emergent construction activity or a festival along the route may be determined by the system **300**, such activity being unknown to the operator and passengers, and the system **300** will recommend alternate routes to reduce the impact to the passengers and the operator, where the impacts of the alternate routes are predicted by the system **300**. Another example includes the system **300** making dynamic recommendations to the operator of the commercial transport vehicle **360** to adjust the speed to a different band based on the real time weather, traffic, and road conditions based on the predictions of the present traversal of the selected route.

(69) In at least some of the embodiments described herein, the use of sensitive and personal data is minimized whenever possible and established security mechanisms are employed to keep all of the data secure. The collection and use of the passenger data stored in the passengers' historical records **176** is permitted through each individual passenger's consent. Similarly, the use of the drivers' historical driving records **175** is permitted through each individual driver's consent. Also, similarly, the inclusion in the system **300** for collecting real time data is permitted through each passenger's and each driver's consent.

(70) In some embodiments, the models resident within the models module **166** are trained through ingestion of the data in the historical database **172** to facilitate supervised ML learning as previously described herein. The models are configured to predict the combinations of the routes, drivers, and passengers, and to predict the assigned color coding for the attributes of each including the color coding that will be assigned to the selected commercial transport vehicle **360**. In some embodiments, the potential passengers will choose the particular commercial transport vehicle **360** as a function of the overall assigned color coding that is predicted to be displayed on the color indicating device **364**. In some embodiments, the totality of the data in the historical database **172** will be divided into two groups, i.e., the training data and the testing data, where each group includes the appropriate portions of each of the historical color changes for drivers data **173**, historical route adherence data **174**, drivers' historical driving records **175**, passengers' historical records **176**, historical weather conditions data **177**, historical traffic conditions data **178**, historical road conditions data **179**, known geographic and environmental attributes **181**, and the drivers' color-coding scheme **183**.

(71) In at least some embodiments, once the models are trained and tested, and once the models are placed into production within the system **300**, the outputs (i.e., predictions) of the models as they are generated through typical operation of the system **300** as described herein are automatically compared to the appropriate portions of the historical database **172** to determine if additional training of the models is required or to update the models automatically. These comparisons are executed through the historical comparison engine **169** (see FIG. **1**B). In addition to the aforementioned quality checks, outliers are determined for further investigation. For example, and without limitation, a passenger rating of a particular operator may be assigned a red color code for operator, where that particular operator as previously obtained only green responses from the passengers and green predicted outputs from the models of the system **300**. Such an experience may be established as an outlier and be discounted, at least initially. However, if the frequency of other-than-green results of the comparisons increase, the system **300** will automatically update the models to better align the predictions with the results. In addition, the augmented/simulated route is evaluated and validated from the perspectives of the passengers and the drivers, where the collected feedback data is stored in the respective records databases **175** and **176**. Accordingly, the system

300 is configured to automatically update the database as a result of real world results to generate more accurate predictions.

(72) In some embodiments, the models are trained using real time data ingestion, thereby utilizing the previously described feedback features to improve predictions starting at the initial training stage, where the training will be supervised. This training method for the models will decrease the initial training of the system **300** prior to being placed into production, with the increased supervision occurring after being placed into production. In some embodiments, any hybrid combination of pre-production training and post-production training is used that enables operation of the system **300** as described herein.

(73) Referring to FIG. **4**A, a flowchart of a process **400** for automatic collection, generation, and presentation of real time information to vehicular occupants is presented, in accordance with some embodiments of the present disclosure. FIG. **4**B is a continuation of the flowchart presented in FIG. **4**A. Referring to FIG. **3** as well, the process **400** is configured to automatically and dynamically provide recommendations and insights to the passengers and operator of a vehicle (e.g., the commercial transport vehicle **360**) while travelling therein. In addition, the process **400** is configured to provide recommendations and insights to drivers and passengers of other vehicles and proximate pedestrians, including potential passengers.

(74) In one or more embodiments, the process **400** represents a computer-implemented method that includes determining **402** a first driver profile for a first driver of a first vehicle, i.e., the commercial transport vehicle **360**. The determination step **402** includes determining **404**, through one or more of simulation, augmented reality, and virtual reality techniques, at least a portion of the route to be traversed by the first driver. The determination step **402** also includes determining **406**, at least partially based on the driver's performance for one or more of similar and identical routes, a historical record for the first driver i.e., the drivers' historical driving records **175** (see FIG. **1**C). The determination step **402** further includes determining **408**, in real time, the performance of the first driver along the determined route.

(75) In at least some embodiments, the process **400** includes determining **410**, subject to the first driver profile determination of step **402**, a color assignment for the first driver. The color assignment is at least partially indicative of the driver profile, and the color assignment is at least a portion of a representation of the first driver. In addition, the color is prominently displayed on a color indicating device **364** mounted on the commercial transport vehicle **360** to advertise the present disposition of the driver.

(76) The process **400** further includes adjusting **412**, dynamically in real time as the first driver traverses the determined route, the assigned color to the first driver. In addition, the process includes communicating **414** the color assignment to potential passengers **338** of the first vehicle (the commercial transport vehicle **360**) and one or more present occupants of the first vehicle. For at least some drivers and potential occupants, the process includes qualifying **416** the first driver at least partially subject to the assigned color, and also disqualifying the first driver at least partially subject to the assigned color.

(77) In some embodiments, the process **400** includes communicating **418** the color assignment to one or more of one or more pedestrians **336**, one or more second drivers of second vehicles **340** and **342** within a predetermined proximity of the first vehicle, i.e., the commercial transport vehicle **360**, and one or more passengers of the second vehicles **340** and **342**. Furthermore, in some embodiments, the process **400** includes determining **420** a driver profile for one or more of the second drivers of the second vehicles **340** and **342** and one or more third drivers of the third vehicles **340** and **342**, and ranking the first driver, the second drivers, and the third drivers at least partially through the respective driver profiles. The process **400** further includes receiving **422** the color assignments of the one or more second drivers in the second vehicles **340** and **342** with a predetermined proximity of the first vehicle. The process also includes adjusting **424**, automatically and dynamically in real time, subject to the color assignments of the first driver and the one or

more second drivers, one or more of a distance between the first vehicle and the one or more second vehicles and a speed of the first vehicle.

(78) The system, computer program product, and method as disclosed and described herein are configured for automatic collection, generation, and presentation of real time information to vehicular occupants, and, more specifically, to automatically and dynamically provide recommendations and insights to the passengers and operator of a vehicle while travelling therein. The system, computer program product, and method provide for a complete end-to-end system to provide real-time feedback to the onboard passengers of a vehicle with details of the trip that may otherwise be unavailable to them. The system has augmented intelligence capabilities to consider the various attributes such as known dynamic behaviors of the driver based on the driver's profile. The vehicles operated by the particular driver are assigned a color code based on the driver's historical and present real time performance, and the color coding of the vehicle with the driver is cascaded through multiple communications channels. The driver profile is generated through machine learning techniques including, without limitation, supervised learning of a model through an artificial intelligence platform. In addition, additional vehicles in proximity to the driver's vehicle are also color coded and information sis passed vehicle-to-vehicle through IoT techniques such as V2V and V2I communications.

(79) Moreover, the embodiments described herein are integrated into a practical application through the combination of elements to automatically assign a color code to a plurality of vehicles as a function of the profiles of the respective drivers. The profiles of the drivers are based on the respective drivers' performances with respect to travelling routes subject to the weather, traffic, and road conditions presented to them. The driver profiles and the color coding are used to assist the potential passengers of the respective vehicles an opportunity to select the driver that is most amenable to the particular sensitivities of the potential passengers. In addition, the flow of information with respect to the conditions along the route facilitate improving the drive experience for the passengers through managing their expectations for the drive. For example, the system analyzes the road conditions and provides the driver and passengers with relevant hazard information, e.g., the severity of potholes along the route. In addition, with the adjacent drivers and vehicles also color coded and communicating with each other, unplanned vehicular incidents are avoided through anticipation of each other's reaction to previous conditions. Moreover, particular drivers for certain conditions may be not selected by a potential passenger based on their driving profile. The addition of passenger profiles facilitates improved matchings of drivers and passengers to either qualify or disqualify the operators thereof.

(80) Furthermore, the practical implementation of the elements described herein results in the system configured to automatically adjust the speed of the vehicle and thereby adjusting the distance between vehicles, front and back as well as laterally. Such distancing and speed adjustments are based on the color coding, proximity of the other vehicles, and the local weather, traffic, and road conditions.

(81) Referring now to FIG. **5**, a block schematic diagram is provided illustrating a computing system **501** that may be used in implementing one or more of the methods, tools, and modules, and any related functions, described herein (e.g., using one or more processor circuits or computer processors of the computer), in accordance with some embodiments of the present disclosure. In some embodiments, the major components of the computer system **501** may comprise one or more CPUs **502**, a memory subsystem **504**, a terminal interface **512**, a storage interface **516**, an I/O (Input/Output) device interface **514**, and a network interface **518**, all of which may be communicatively coupled, directly or indirectly, for inter-component communication via a memory bus **503**, an I/O bus **508**, and an I/O bus interface unit **510**.

(82) The computer system **501** may contain one or more general-purpose programmable central processing units (CPUs) **502-1**, **502-2**, **502-3**, **502**-N, herein collectively referred to as the CPU **502**. In some embodiments, the computer system **501** may contain multiple processors typical of a

relatively large system; however, in other embodiments the computer system **501** may alternatively be a single CPU system. Each CPU **502** may execute instructions stored in the memory subsystem **504** and may include one or more levels of on-board cache.

(83) System memory **504** may include computer system readable media in the form of volatile memory, such as random access memory (RAM) **522** or cache memory **524**. Computer system **501** may further include other removable/non-removable, volatile/non-volatile computer system storage media. By way of example only, storage system **526** can be provided for reading from and writing to a non-removable, non-volatile magnetic media, such as a “hard drive.” Although not shown, a magnetic disk drive for reading from and writing to a removable, non-volatile magnetic disk (e.g., a “floppy disk”), or an optical disk drive for reading from or writing to a removable, non-volatile optical disc such as a CD-ROM, DVD-ROM or other optical media can be provided. In addition, memory **504** can include flash memory, e.g., a flash memory stick drive or a flash drive. Memory devices can be connected to memory bus **503** by one or more data media interfaces. The memory **504** may include at least one program product having a set (e.g., at least one) of program modules that are configured to carry out the functions of various embodiments.

(84) Although the memory bus **503** is shown in FIG. **5** as a single bus structure providing a direct communication path among the CPUs **502**, the memory subsystem **504**, and the I/O bus interface **510**, the memory bus **503** may, in some embodiments, include multiple different buses or communication paths, which may be arranged in any of various forms, such as point-to-point links in hierarchical, star or web configurations, multiple hierarchical buses, parallel and redundant paths, or any other appropriate type of configuration. Furthermore, while the I/O bus interface **510** and the I/O bus **508** are shown as single respective units, the computer system **501** may, in some embodiments, contain multiple I/O bus interface units **510**, multiple I/O buses **508**, or both. Further, while multiple I/O interface units are shown, which separate the I/O bus **508** from various communications paths running to the various I/O devices, in other embodiments some or all of the I/O devices may be connected directly to one or more system I/O buses.

(85) In some embodiments, the computer system **501** may be a multi-user mainframe computer system, a single-user system, or a server computer or similar device that has little or no direct user interface, but receives requests from other computer systems (clients). Further, in some embodiments, the computer system **501** may be implemented as a desktop computer, portable computer, laptop or notebook computer, tablet computer, pocket computer, telephone, smart phone, network switches or routers, or any other appropriate type of electronic device.

(86) It is noted that FIG. **5** is intended to depict the representative major components of an exemplary computer system **501**. In some embodiments, however, individual components may have greater or lesser complexity than as represented in FIG. **5**, components other than or in addition to those shown in FIG. **5** may be present, and the number, type, and configuration of such components may vary.

(87) One or more programs/utilities **528**, each having at least one set of program modules **530** may be stored in memory **504**. The programs/utilities **528** may include a hypervisor (also referred to as a virtual machine monitor), one or more operating systems, one or more application programs, other program modules, and program data. Each of the operating systems, one or more application programs, other program modules, and program data or some combination thereof, may include an implementation of a networking environment. Programs **528** and/or program modules **530** generally perform the functions or methodologies of various embodiments.

(88) It is to be understood that although this disclosure includes a detailed description on cloud computing, implementation of the teachings recited herein is not limited to a cloud computing environment. Rather, embodiments of the present disclosure are capable of being implemented in conjunction with any other type of computing environment now known or later developed.

(89) Cloud computing is a model of service delivery for enabling convenient, on-demand network access to a shared pool of configurable computing resources (e.g., networks, network bandwidth,

servers, processing, memory, storage, applications, virtual machines, and services) that can be rapidly provisioned and released with minimal management effort or interaction with a provider of the service. This cloud model may include at least five characteristics, at least three service models, and at least four deployment models.

(90) Characteristics are as follows:

(91) On-demand self-service: a cloud consumer can unilaterally provision computing capabilities, such as server time and network storage, as needed automatically without requiring human interaction with the service's provider.

(92) Broad network access: capabilities are available over a network and accessed through standard mechanisms that promote use by heterogeneous thin or thick client platforms (e.g., mobile phones, laptops, and PDAs).

(93) Resource pooling: the provider's computing resources are pooled to serve multiple consumers using a multi-tenant model, with different physical and virtual resources dynamically assigned and reassigned according to demand. There is a sense of location independence in that the consumer generally has no control or knowledge over the exact location of the provided resources but may be able to specify location at a higher level of abstraction (e.g., country, state, or datacenter).

(94) Rapid elasticity: capabilities can be rapidly and elastically provisioned, in some cases automatically, to quickly scale out and rapidly released to quickly scale in. To the consumer, the capabilities available for provisioning often appear to be unlimited and can be purchased in any quantity at any time.

(95) Measured service: cloud systems automatically control and optimize resource use by leveraging a metering capability at some level of abstraction appropriate to the type of service (e.g., storage, processing, bandwidth, and active user accounts). Resource usage can be monitored, controlled, and reported, providing transparency for both the provider and consumer of the utilized service.

(96) Service Models are as follows.

(97) Software as a Service (SaaS): the capability provided to the consumer is to use the provider's applications running on a cloud infrastructure. The applications are accessible from various client devices through a thin client interface such as a web browser (e.g., web-based e-mail). The consumer does not manage or control the underlying cloud infrastructure including network, servers, operating systems, storage, or even individual application capabilities, with the possible exception of limited user-specific application configuration settings.

(98) Platform as a Service (PaaS): the capability provided to the consumer is to deploy onto the cloud infrastructure consumer-created or acquired applications created using programming languages and tools supported by the provider. The consumer does not manage or control the underlying cloud infrastructure including networks, servers, operating systems, or storage, but has control over the deployed applications and possibly application hosting environment configurations.

(99) Infrastructure as a Service (IaaS): the capability provided to the consumer is to provision processing, storage, networks, and other fundamental computing resources where the consumer is able to deploy and run arbitrary software, which can include operating systems and applications. The consumer does not manage or control the underlying cloud infrastructure but has control over operating systems, storage, deployed applications, and possibly limited control of select networking components (e.g., host firewalls).

(100) Deployment Models are as follows.

(101) Private cloud: the cloud infrastructure is operated solely for an organization. It may be managed by the organization or a third party and may exist on-premises or off-premises.

(102) Community cloud: the cloud infrastructure is shared by several organizations and supports a specific community that has shared concerns (e.g., mission, security requirements, policy, and compliance considerations). It may be managed by the organizations or a third party and may exist

on-premises or off-premises.
(103) Public cloud: the cloud infrastructure is made available to the general public or a large industry group and is owned by an organization selling cloud services.
(104) Hybrid cloud: the cloud infrastructure is a composition of two or more clouds (private, community, or public) that remain unique entities but are bound together by standardized or proprietary technology that enables data and application portability (e.g., cloud bursting for load-balancing between clouds).
(105) A cloud computing environment is service oriented with a focus on statelessness, low coupling, modularity, and semantic interoperability. At the heart of cloud computing is an infrastructure that includes a network of interconnected nodes.
(106) A cloud computing environment is service oriented with a focus on statelessness, low coupling, modularity, and semantic interoperability. At the heart of cloud computing is an infrastructure that includes a network of interconnected nodes. The system **501** may be employed in a cloud computing environment.
(107) Referring to FIG. **6**, a schematic diagram is provided illustrating a cloud computing environment **650**, in accordance with some embodiments of the present disclosure. As shown, cloud computing environment **650** comprises one or more cloud computing nodes **610** with which local computing devices used by cloud consumers, such as, for example, personal digital assistant (PDA) or cellular telephone **654**A, desktop computer **654**B, laptop computer **654**C, and/or automobile computer system **654**N may communicate. Nodes **610** may communicate with one another. They may be grouped (not shown) physically or virtually, in one or more networks, such as Private, Community, Public, or Hybrid clouds as described hereinabove, or a combination thereof. This allows cloud computing environment **650** to offer infrastructure, platforms and/or software as services for which a cloud consumer does not need to maintain resources on a local computing device. It is understood that the types of computing devices **654**A-N shown in FIG. **6** are intended to be illustrative only and that computing nodes **610** and cloud computing environment **650** may communicate with any type of computerized device over any type of network and/or network addressable connection (e.g., using a web browser).
(108) Referring to FIG. **7**, a schematic diagram is provided illustrating a set of functional abstraction model layers provided by the cloud computing environment **750** (FIG. **7**), in accordance with some embodiments of the present disclosure. It should be understood in advance that the components, layers, and functions shown in FIG. **7** are intended to be illustrative only and embodiments of the disclosure are not limited thereto. As depicted, the following layers and corresponding functions are provided:
(109) Hardware and software layer **760** includes hardware and software components. Examples of hardware components include: mainframes **761**; RISC (Reduced Instruction Set Computer) architecture based servers **762**; servers **763**; blade servers **764**; storage devices **765**; and networks and networking components **766**. In some embodiments, software components include network application server software **767** and database software **768**.
(110) Virtualization layer **770** provides an abstraction layer from which the following examples of virtual entities may be provided: virtual servers **771**; virtual storage **772**; virtual networks **773**, including virtual private networks; virtual applications and operating systems **774**; and virtual clients **775**.
(111) In one example, management layer **780** may provide the functions described below. Resource provisioning **781** provides dynamic procurement of computing resources and other resources that are utilized to perform tasks within the cloud computing environment. Metering and Pricing **782** provide cost tracking as resources are utilized within the cloud computing environment, and billing or invoicing for consumption of these resources. In one example, these resources may comprise application software licenses. Security provides identity verification for cloud consumers and tasks, as well as protection for data and other resources. User portal **783** provides access to the cloud

computing environment for consumers and system administrators. Service level management **784** provides cloud computing resource allocation and management such that required service levels are met. Service Level Agreement (SLA) planning and fulfillment **785** provide pre-arrangement for, and procurement of, cloud computing resources for which a future requirement is anticipated in accordance with an SLA.

(112) Workloads layer **790** provides examples of functionality for which the cloud computing environment may be utilized. Examples of workloads and functions which may be provided from this layer include: mapping and navigation **791**; software development and lifecycle management **792**; layout detection **793**; data analytics processing **794**; transaction processing **795**; and to automatic collection, generation, and presentation of real time information to vehicular occupants **796**.

(113) The present disclosure may be a system, a method, and/or a computer program product at any possible technical detail level of integration. The computer program product may include a computer readable storage medium (or media) having computer readable program instructions thereon for causing a processor to carry out aspects of the present disclosure.

(114) The computer readable storage medium can be a tangible device that can retain and store instructions for use by an instruction execution device. The computer readable storage medium may be, for example, but is not limited to, an electronic storage device, a magnetic storage device, an optical storage device, an electromagnetic storage device, a semiconductor storage device, or any suitable combination of the foregoing. A non-exhaustive list of more specific examples of the computer readable storage medium includes the following: a portable computer diskette, a hard disk, a random access memory (RAM), a read-only memory (ROM), an erasable programmable read-only memory (EPROM or Flash memory), a static random access memory (SRAM), a portable compact disc read-only memory (CD-ROM), a digital versatile disk (DVD), a memory stick, a floppy disk, a mechanically encoded device such as punch-cards or raised structures in a groove having instructions recorded thereon, and any suitable combination of the foregoing. A computer readable storage medium, as used herein, is not to be construed as being transitory signals per se, such as radio waves or other freely propagating electromagnetic waves, electromagnetic waves propagating through a waveguide or other transmission media (e.g., light pulses passing through a fiber-optic cable), or electrical signals transmitted through a wire.

(115) Computer readable program instructions described herein can be downloaded to respective computing/processing devices from a computer readable storage medium or to an external computer or external storage device via a network, for example, the Internet, a local area network, a wide area network and/or a wireless network. The network may comprise copper transmission cables, optical transmission fibers, wireless transmission, routers, firewalls, switches, gateway computers and/or edge servers. A network adapter card or network interface in each computing/processing device receives computer readable program instructions from the network and forwards the computer readable program instructions for storage in a computer readable storage medium within the respective computing/processing device.

(116) Computer readable program instructions described herein can be downloaded to respective computing/processing devices from a computer readable storage medium or to an external computer or external storage device via a network, for example, the Internet, a local area network, a wide area network and/or a wireless network. The network may comprise copper transmission cables, optical transmission fibers, wireless transmission, routers, firewalls, switches, gateway computers and/or edge servers. A network adapter card or network interface in each computing/processing device receives computer readable program instructions from the network and forwards the computer readable program instructions for storage in a computer readable storage medium within the respective computing/processing device.

(117) Computer readable program instructions for carrying out operations of the present disclosure may be assembler instructions, instruction-set-architecture (ISA) instructions, machine instructions,

machine dependent instructions, microcode, firmware instructions, state-setting data, configuration data for integrated circuitry, or either source code or object code written in any combination of one or more programming languages, including an object oriented programming language such as Smalltalk, C++, or the like, and procedural programming languages, such as the “C” programming language or similar programming languages. The computer readable program instructions may execute entirely on the user's computer, partly on the user's computer, as a stand-alone software package, partly on the user's computer and partly on a remote computer or entirely on the remote computer or server. In the latter scenario, the remote computer may be connected to the user's computer through any type of network, including a local area network (LAN) or a wide area network (WAN), or the connection may be made to an external computer (for example, through the Internet using an Internet Service Provider). In some embodiments, electronic circuitry including, for example, programmable logic circuitry, field-programmable gate arrays (FPGA), or programmable logic arrays (PLA) may execute the computer readable program instructions by utilizing state information of the computer readable program instructions to personalize the electronic circuitry, in order to perform aspects of the present disclosure.

(118) Aspects of the present disclosure are described herein with reference to flowchart illustrations and/or block diagrams of methods, apparatus (systems), and computer program products according to embodiments of the disclosure. It will be understood that each block of the flowchart illustrations and/or block diagrams, and combinations of blocks in the flowchart illustrations and/or block diagrams, can be implemented by computer readable program instructions.

(119) These computer readable program instructions may be provided to a processor of a computer, or other programmable data processing apparatus to produce a machine, such that the instructions, which execute via the processor of the computer or other programmable data processing apparatus, create means for implementing the functions/acts specified in the flowchart and/or block diagram block or blocks. These computer readable program instructions may also be stored in a computer readable storage medium that can direct a computer, a programmable data processing apparatus, and/or other devices to function in a particular manner, such that the computer readable storage medium having instructions stored therein comprises an article of manufacture including instructions which implement aspects of the function/act specified in the flowchart and/or block diagram block or blocks.

(120) The computer readable program instructions may also be loaded onto a computer, other programmable data processing apparatus, or other device to cause a series of operational steps to be performed on the computer, other programmable apparatus or other device to produce a computer implemented process, such that the instructions which execute on the computer, other programmable apparatus, or other device implement the functions/acts specified in the flowchart and/or block diagram block or blocks.

(121) The flowchart and block diagrams in the Figures illustrate the architecture, functionality, and operation of possible implementations of systems, methods, and computer program products according to various embodiments of the present disclosure. In this regard, each block in the flowchart or block diagrams may represent a module, segment, or portion of instructions, which comprises one or more executable instructions for implementing the specified logical function(s). In some alternative implementations, the functions noted in the blocks may occur out of the order noted in the Figures. For example, two blocks shown in succession may, in fact, be accomplished as one step, executed concurrently, substantially concurrently, in a partially or wholly temporally overlapping manner, or the blocks may sometimes be executed in the reverse order, depending upon the functionality involved. It will also be noted that each block of the block diagrams and/or flowchart illustration, and combinations of blocks in the block diagrams and/or flowchart illustration, can be implemented by special purpose hardware-based systems that perform the specified functions or acts or carry out combinations of special purpose hardware and computer instructions.

(122) The descriptions of the various embodiments of the present disclosure have been presented for purposes of illustration, but are not intended to be exhaustive or limited to the embodiments disclosed. Many modifications and variations will be apparent to those of ordinary skill in the art without departing from the scope and spirit of the described embodiments. The terminology used herein was chosen to best explain the principles of the embodiments, the practical application or technical improvement over technologies found in the marketplace, or to enable others of ordinary skill in the art to understand the embodiments disclosed herein.

Claims

1. A computer system for automatic collection, generation, and presentation of real time information to vehicular occupants comprising: one or more processing devices; one or more memory devices communicatively and operably coupled to the one or more processing devices; a transport information tool communicatively and operably coupled to the one or more processing devices and the one or more memory devices comprising: a vehicle occupant profiling engine configured to determine a first driver profile for a first driver of a first vehicle; and a modeling engine configured to determine, subject to the first driver profile determination, a color assignment for the first driver according to a color coding scheme, wherein the color assignment is at least partially indicative of the driver profile and real time conditions, the color assignment is at least a portion of a representation of the first driver and the color coding scheme is at least partially established based on geographic parameters; and a computer network configured to communicate the color assignment to one or more of: one or more potential occupants of the first vehicle; and one or more occupants of the first vehicle.
2. The system of claim 1, wherein: the system further comprises a route augmentation and simulation engine configured to determine, through one or more of simulation, augmented reality, and virtual reality techniques, at least a portion of a route to be traversed by the first driver; the vehicle occupant profiling engine is further configured to: determine, at least partially based on a performance of the first driver for one or more of similar and identical routes, a historical record for the first driver; and determine, in real time, the performance of the first driver along the determined route.
3. The system of claim 1, wherein the computer network is further configured to: communicate the color assignment to one or more of: one or more pedestrians; one or more second drivers of second vehicles within a predetermined proximity of the first vehicle; and one or more passengers of the second vehicles.
4. The system of claim 1, wherein the computer network is further configured to: receive color assignments of one or more second drivers in second vehicles with a predetermined proximity of the first vehicle.
5. The system of claim 4, further comprising a vehicle positioning engine configured to: adjust, automatically and dynamically in real time, subject to the color assignments of the first driver and the one or more second drivers, one or more of: a distance between the first vehicle and the one or more second vehicles; and a speed of the first vehicle.
6. The system of claim 1, wherein the modeling engine is further configured to: adjust, dynamically in real time as the first driver traverses the determined route, the assigned color to the first driver.
7. The system of claim 1, wherein the modeling engine is further configured to: qualify the first driver at least partially subject to the assigned color; and disqualify the first driver at least partially subject to the assigned color.
8. The system of claim 1, wherein the vehicle occupant profiling engine is further configured to: determine a driver profile for one or more third drivers of third vehicles; and rank the first driver and the one or more third drivers at least partially through the respective driver profiles.
9. A computer program product embodied on at least one non-transitory computer readable storage

medium having computer executable instructions for automatic collection, generation, and presentation of real time information to vehicular occupants that when executed cause one or more computing devices to: determine a first driver profile for a first driver of a first vehicle; determine, subject to the first driver profile determination, a color assignment for the first driver according to a color coding scheme, wherein the color assignment is at least partially indicative of the driver profile and real time conditions, the color assignment is at least a portion of a representation of the first driver and the color coding scheme is at least partially established based on geographic parameters; and communicate the color assignment to one or more of: one or more potential occupants of the first vehicle; and one or more occupants of the first vehicle.
10. The computer program product of claim 9, further having computer executable instructions to: determine, through one or more of simulation, augmented reality, and virtual reality techniques, at least a portion of a route to be traversed by the first driver; determine, at least partially based on based on a performance of the first driver for one or more of similar and identical routes, a historical record for the first driver; and determine, in real time, the performance of the first driver along the determined route.
11. The computer program product of claim 9, further having computer executable instructions to: receive color assignments of one or more second drivers in second vehicles with a predetermined proximity of the first vehicle; and adjust, automatically and dynamically in real time, subject to the color assignments of the first driver and the one or more second drivers, one or more of: a distance between the first vehicle and the one or more second vehicles; and a speed of the first vehicle.
12. The computer program product of claim 9, further having computer executable instructions to: adjust, dynamically in real time as the first driver traverses the determined route, the assigned color to the first driver; qualify the first driver at least partially subject to the assigned color; disqualify the first driver at least partially subject to the assigned color; determine a driver profile for one or more third drivers of third vehicles; and rank the first driver and the one or more third drivers at least partially through the respective driver profiles.
13. A computer-implemented method for automatic collection, generation, and presentation of real time information to vehicular occupants comprising: determining a first driver profile for a first driver of a first vehicle; determining, subject to the first driver profile determination, a color assignment for the first driver according to a color coding scheme, wherein the color assignment is at least partially indicative of the driver profile and real time conditions, the color assignment is at least a portion of a representation of the first driver and the color coding scheme is at least partially established based on geographic parameters; and communicating the color assignment to one or more of: one or more potential occupants of the first vehicle; and one or more occupants of the first vehicle.
14. The method of claim 13, wherein the determining the first driver profile comprises: determining, through one or more of simulation, augmented reality, and virtual reality techniques, at least a portion of a route to be traversed by the first driver; determining, at least partially based on based on a performance of the first driver for one or more of similar and identical routes, a historical record for the first driver; and determining, in real time, the performance of the first driver along the determined route.
15. The method of claim 13, further comprising: communicating the color assignment to one or more of: one or more pedestrians; one or more second drivers of second vehicles within a predetermined proximity of the first vehicle; and one or more passengers of the second vehicles.
16. The method of claim 13, further comprising: receiving color assignments of one or more second drivers in second vehicles with a predetermined proximity of the first vehicle.
17. The method of claim 16, further comprising: adjusting, automatically and dynamically in real time, subject to the color assignments of the first driver and the one or more second drivers, one or more of: a distance between the first vehicle and the one or more second vehicles; and a speed of the first vehicle.

18. The method of claim 13, further comprising: adjusting, dynamically in real time as the first driver traverses the determined route, the assigned color to the first driver.
19. The method of claim 13, further comprising one of: qualifying the first driver at least partially subject to the assigned color; and disqualifying the first driver at least partially subject to the assigned color.
20. The method of claim 13, further comprising: determining a driver profile for one or more third drivers of third vehicles; and ranking the first driver and the one or more third drivers at least partially through the respective driver profiles.