SYSTEM & METHOD FOR DETERMINING A DRIVER'S INSURABILITY

The present invention is directed to a system and method for the field of automobile insurance, more specifically, a system and method of determining a driver's insurability using advanced in-vehicle telematics technology to assess individual driving styles and modes of operation such that insurance premiums can be periodically evaluated as the results are communicated to the drivers via a mobile application.
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FIELD OF THE INVENTION

The present invention is directed to a business system and method in the field of automobile insurance, more specifically, a system and method of determining a driver's insurability using advanced in-vehicle telematics technology to assess individual driving styles and modes of operation such that insurance premiums can be periodically evaluated as the results are communicated to the drivers via a mobile application.

DESCRIPTION OF THE PRIOR ART

There are other systems and methods for determining the cost of insurance based upon monitoring and communicating data pertaining to how a driver operates a vehicle. For example, U.S. Patent No. 5,797,134 issued to McMillan on August 18, 1998.

U.S. Patent No. 5,797,134

Inventor: Robert John McMillan

Issued: August 18, 1998

A method and system of determining a cost of automobile insurance based upon monitoring, recording and communicating data representative of operator and vehicle driving characteristics. The cost is adjustable retrospectively and can be prospectively set by relating the driving characteristics to predetermined safety standards. The method comprises steps of monitoring a plurality of raw data elements representative of an operating state of the vehicle or an action of the operator. Selected ones of the raw data elements are recorded when the ones are determined to have an identified relationship to safety standards. The selected ones are consolidated for processing against an insurer profile and for identifying a surcharge or discount
to be applied to a base cost of automobile insurance. A final cost is produced from the base costs and the surcharges or discounts.

Another patent, U.S. Patent No. 6,064,970 was issued to McMillan on May 16, 2000.

U.S. Patent No. 6,064,970

Inventor: Robert John McMillan

Issued: May 16, 2000

A method and system of determining a cost of automobile insurance based upon monitoring, recording and communicating data representative of operator and vehicle driving characteristics. The cost is adjustable retrospectively and can be prospectively set by relating the driving characteristics to predetermined safety standards. The method comprises steps of monitoring a plurality of raw data elements representative of an operating state of the vehicle or an action of the operator. Selected ones of the raw data elements are recorded when the ones are determined to have an identified relationship to safety standards. The selected ones are consolidated for processing against an insurer profile and for identifying a surcharge or discount to be applied to a base cost of automobile insurance. A final cost is produced from the base costs and the surcharges or discounts.

While these systems and methods may be suitable for the purposes for which they were designed, they would not be suitable for the purposes of the present invention hereinafter described. One of the limitations of the systems and methods of the prior art is that the monitoring sessions attempt to monitor a driver's vehicle operation, but there are no provisions for multiple drivers having access to, or operating the same vehicle during the monitoring sessions in a prescribed period. Specifically, there is no way to solely track an individual driver's operation of the monitored vehicle when the vehicle is shared among a plurality of drivers.
Similarly, there are no known prior art that provide for periodic communication of the individual driver's operation of the monitored vehicle thus providing the driver with actual driving assessment record to determine his/her insurability. Thus, there needs to be a system and method for determining a driver's insurability and for a driver and/or an insurer to have the ability to receive notification of the driver's assessment record on a periodic basis.

Accordingly, the various embodiments and disclosures described herein satisfies these long felt needs and solves the limitations of the prior art in a new and novel manner.

**SUMMARY OF THE INVENTION**

The present invention overcomes the limitations of the prior art by providing a system and method in the field of automobile insurance, more specifically, a system and method of determining a driver's insurability using advanced in-vehicle telematics technology to assess individual driving styles and modes of vehicle operation such that insurance premiums can be periodically evaluated as the results are communicated to the drivers and/or insurance company via a mobile application.

An object of the present invention is to provide a simple, yet efficient method of uniformly evaluating the risks associated with insuring an individual driver.

Still another object of the invention is to communicate via mobile application the results of the in-vehicle telematics technology used to assess the individual driving styles and modes of operation to determine his or her insurability, such that the driver may take corrective steps if necessary, to improve his/her objective driver score.

Still yet another object of the invention is to incentivize better and safer driving.
Another object of the invention is to allow young adult drivers the opportunity to obtain reasonably priced insurance based on their actual driving skills instead of being denied insurance and excluded from the road by often inaccurate and unfair assumptions about their driving style.

Another object of the invention is to encourage a community of safe drivers as all interested parties, i.e. the insurer and the potential insured drivers, are equally aware of the results derived from the individual driver's actual vehicle operation as opposed to statistical data for a demographic group.

Yet another object of the invention is to provide periodic updates, e.g. every three (3) months, to individual drivers and/or the insurer on the results of their actual driving skills via a mobile application directly to their mobile phones.

Still yet another object of the invention is to allow a driver to amend his/her premiums or original quotes for insurance based on actual data regarding the driver's vehicle operation. In some embodiments, after a trial period, e.g. 6 months or 1 year, the driver may return the telematic monitoring unit and the driver is given a permanent objective driver score, which can be used to negotiate car insurance rates for a prescribed number of years, e.g. two (2) years.

Yet another object of the invention is to allow for a business model wherein drivers' insurance costs are directly related to monitoring of actual vehicle operation and driving patterns.

Accordingly, the present invention provides a system and method of determining a driver's insurability comprising: providing each driver with a portable pin unit with a unique electronic key used as a unique identifier for the driver being assessed, and wherein said portable pin unit includes means for selective activation of a telematic monitoring unit in at least one vehicle to start a monitoring session by monitoring the individual driver's operation of the at least one vehicle in a manner that is independent of the vehicle such that concurrent monitoring
of a plurality of drivers of the same vehicle can occur; providing a mobile device, which includes a computer central processor positioned within, wherein the mobile device is configured for communicating over a communication network; providing computer executable instructions readable by the mobile device's computer central processor and configured to perform any one or more of the following: activate a driver score application program for communicating the results of a driver's risk assessment record to a driver and/or insurer based on the driver's actual driving skills as monitored by in-vehicle telematics technology; determining and displaying the driver's risk assessment record on the mobile device's displaying means; or generating an objective driver score based on the driver's risk assessment record and an aggregate of the individual weighted scores derived from the plurality of risk assessment factors.

In some embodiments, system and method further comprise of receiving registration via the driver score application program of a driver's first or secondary vehicles and personal history, which includes a plurality of risk assessment factors, wherein said risk assessment factors are each analyzed to derive individual weighted scores, and wherein the individual weighted scores are each distinct from an objective driver score used to assess said driver's insurability. The driver's personal history may include but is not limited to any one or more of the following: name, age, sex, marital status, and student status and the like. Risk assessment factors includes any one or more of the following: credit score, employment history, driving experience, social security number, driving record, address history, insurance history, and the number of outstanding tickets within a predetermined period and other like risk assessment factors that are known and used in the arts.

System and method may further comprise of equipping at least one vehicle with the telematic monitoring unit, where upon activation the driver's operation of the vehicle and other
pertinent data elements concerning the vehicle are monitored, recorded and transmitted to an evaluation center to generate said driver's risk assessment record; and/or receiving registration for variable parameters concerning vehicle operation for the monitoring session. The telematic monitoring unit when installed in the vehicle, uses Global Positioning System to send information about the driver's vehicle operation, e.g. speed, cornering, braking, how the car is driven on different types of road and the like, to an evaluation center. Variable parameters may include any one or more of the following: the title, vehicle registration and vehicle identification numbers for each secondary vehicle being registered, as well as the number of other drivers, names, addresses, ages, student status, sex(es) of each additional driver who has access to, or will be operating the vehicle and the like.

In some embodiments, portable pin unit communicates with the telematic monitoring unit via wireless communication systems.

System and method further comprises of driver record which includes any one or more of the following: a record of driver's turning ability, applied brake pressure, average speed, adherence to speed limits, car impact, cornering, operability on different types of roads, and the like.

Each driver being monitored is provided with a portable pin unit with a unique electronic key used as a unique identifier for the driver being assessed, which is registered in a database with an evaluation center. The portable pin unit activates the telematic monitoring unit, which may also be portable, and able to communicate wirelessly with the varied sensors in a specific vehicle that is being monitored, which may obviate the need for registration of the vehicle. In an alternate embodiment, the telematic monitoring unit is hard wired into the vehicle's system and may require registration.
According to one embodiment of the invention, the system may receive registration of at least one vehicle, a primary and/or any secondary vehicle, which the driver may operate during the monitoring sessions within the prescribed period, as well as any other variable parameters concerning vehicle operation for the monitoring sessions.

The telematic monitoring unit may transmit the driver's risk assessment record to the evaluation center in realtime or with minimal delay, e.g. 1-10 minutes. The evaluation center receives the driver's risk assessment record, which is analyzed to derive a weighted driver risk assessment score, wherein said weighted driver risk assessment score is distinct from the objective driver score. The system of the invention then determines and outputs the objective driver score, based on the aggregate of the individual weighted scores derived from the plurality of risk assessment factors and the driver's risk assessment record.

For a further and more fully detailed understanding of the present invention, various objects and advantages thereof, reference is made to the following detailed description and the accompanying drawings.

**BRIEF DESCRIPTION OF THE DRAWINGS**

Further objectives and advantages of the present invention may be derived by referring to the detailed description and claims when considered in connection with the Figures, wherein like reference numbers refer to similar items throughout the Figures.

FIG. 1 is an exemplary mobile device according to one embodiment of the system of the present invention.

FIG. 2 is an illustrative system of the invention according to one embodiment.
FIG. 3 is an illustrative screenshot of an exemplary display of the driver score application program displaying the driver's risk assessment record according to one embodiment of the invention.

FIG. 4 is a sample flowchart of an exemplary method of determining a driver's insurability according to an embodiment of the invention.

FIG. 5 is a sample flowchart of an exemplary method of determining a driver score according to an embodiment of the invention.

FIG. 6 is a sample flowchart of an exemplary method of deriving individual weighted scores based on the different risk assessment factors of the driver's personal history in accord with one embodiment of the invention.

FIG. 7 is a block diagram representing an article according to various embodiments.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

The present invention is now described in more detail by reference to the exemplary drawings in detail wherein like numerals indicate like elements throughout the various views. This is for convenience only and is not intended to limit the application of the present invention. In fact, after reading the following description, it will be apparent to one skilled in the relevant art(s) how to implement the following invention in alternate embodiments.

Systems

FIG. 1 is an exemplary mobile device 100 according to one embodiment of the system 102 of the present invention. Mobile device 100 may be any type of device configured with means for communicating wirelessly and/or wired with other mobile devices 100', 100", such as but not limited to, cellular phones (e.g., an iPhone, Android, Palm, Blackberry, or any "smart phone" as are generally known and used in the arts), location-aware portable phones (such as
GPS), a personal computer, server computer, or laptop or netbook computer, a personal digital assistant ("PDA") such as a Palm-based device or Windows CE device, a laptop computer, a tablet personal computer, a portable screen, a portable processing device and/or any other portable device capable of communicating wirelessly over a computer network, local area network, wide area network such as the Internet, or any other type of network device that may communicate over a network.

Mobile device 100 may include various hardware components, e.g. a computer central processor 104, memory means 106, and one or more communication means 108. Central processor 104 may be any type of processor, such as, but not limited to, a central processing unit (CPU), a microprocessor, a video processor, a front end processor, a coprocessor, a single-core central processor, a multi-core processor, and the like. Central processor 104 may be programmed to activate a driver score application program 110 (hereinafter referred to as "driver score application 110") for communicating the results of a driver's risk assessment record 112 based on the driver's actual driving skills as monitored by in-vehicle telematics technology; determining and displaying the driver's risk assessment record 112 (as shown in FIG. 3) on the mobile device's displaying means 114; or generating an objective driver score 122 (as shown in FIG. 3) based on the driver's risk assessment record 112 and the aggregate of the individual weighted scores 116 (as shown in FIG. 3) derived from the plurality of risk assessment factors 118. Risk assessment factors 118 includes any one or more of the following: credit score, employment history, driving experience, social security number, driving record, address history, insurance history, and the number of outstanding tickets within a predetermined period and other like risk assessment factors 118 that are known and used in the arts.
In some embodiments, mobile device 100 also includes a speaker 120 as is well known and used in the arts for audible broadcasting, wherein the speaker 120 may audibly broadcast the driver's risk assessment record 112, data elements 130 or the objective driver score 122.

Mobile device 100 also includes software components that may be stored in memory means 106. Memory means 106 may include computer storage media, for example volatile memory, non-volatile memory, data storage devices, or the like. Computer storage media includes, but is not limited to, RAM, ROM, EEPROM, flash memory or other memory technology, CD-ROM, digital versatile disks (DVD) or other optical storage, magnetic cassettes, magnetic tape, magnetic disk storage or other magnetic storage devices, or any other medium which can be used to store the desired information and which can be accessed by mobile device 100. Mobile device 100 may also contain input element 112 (not shown) for inputting data and output element 114 for displaying data.

Memory means 106 may include an operating system 1004, applications 126, a driver score application program 108, and data elements 130. Driver score application 110 may be an independent component or be incorporated into operating system 1004. Briefly stated, driver score application 110 is a computer-executable component that provides for the results of the monitoring of actual monitoring sessions of the individual driver's driving skills employing in-vehicle telematics technology, e.g. sensors, used to assess the individual driving styles and modes of operation.

Applications 126 are computer-executable components that operate in mobile device 100. Applications 126 may be implemented in a variety of ways. In one embodiment of the invention, applications 126 may use one or more computer-executable components for interacting with driver score application program 108. In another embodiment, driver score application 110 is
incorporated in applications 126 to receive information from the input element, to communicate
with, and/or to control the operations of driver score application 110.

Central processor 104 includes computer executable instructions 130, where the computer executable instructions 130 are operative to perform all the necessary functions for the system 100 and methods disclosed herein. In exemplary embodiments, computer executable instructions 130 may be loaded directly on the mobile device's central processor 104 as shown in FIG. 1, or may be stored in its memory means 106. Computer executable instructions 130 may be any type of computer executable instructions 130, which may be in the form of a computer program, the program being composed in any suitable programming language or source code, such as C++, C, JAVA, JavaScript, HTML, XML, and other programming languages.

Computer executable instructions 130 are operative to perform any all the necessary functions for the system 100 and methods disclosed herein which may include any one or more of the following: activating the driver score application 110 for communicating the results of a driver's risk assessment record 112 based on the driver's actual driving skills being monitored by in-vehicle telematics technology; determining and displaying the driver's risk assessment record 112 on the mobile device's displaying means 114; or generating an objective driver score 122 based on the driver's risk assessment record 112 and the aggregate of the individual weighted scores 116 derived from the plurality of risk assessment factors 118.

Communication means 108 is either electrically or mechanically connected to central processor 104, where in the case of electronic connections, the electronic connections may be wired and/or wireless. In some embodiments, communication means 108 may be a wireless communication means 108, which employ short range wireless protocol, such as, but not limited to, a radio frequency transceiver, a radio frequency receiver, and/or a radio frequency
transmitter. In embodiments where the wireless communication means 108 is a radio frequency receiver, the radio frequency receiver may be any type of radio frequency receiver, including, but not limited to, a positioning system receiver, such as a global positioning system receiver and a local positioning system receiver, such as a Wi-Fi positioning system receiver. In other embodiments, the communication means 108 may employ wireless protocols like Blue Tooth, ZigBee, 702.11 series, or a wireless modem, such as, but not limited to, a global system for mobile communications (GSM) modem, or any other short range wireless protocol that is well known and used in the arts and other future short range wireless protocol suitable for transmitting and receiving data. Communication means 110 are operative to transmit or receive electronic communications, i.e. data, text, pictures, and the like via a short range wireless protocol, such as, but not limited to, a radio frequency receiver, a radio frequency transmitter, or a radio frequency transceiver over a wireless communication network 134.

Signals generated by communication means 108 are one example of communication media. Communication media may typically include computer readable instructions, data structures, program modules, or other data in a modulated data signal, such as a carrier wave or other transport mechanism, and includes any information delivery media. The term "modulated data signal" means a signal that has one or more of its characteristics set or changed in such a manner as to encode information in the signal. By way of example, and not limitation, communication media includes wired media such as a wired network or direct-wired connection, and wireless media such as acoustic, RF, infrared and other wireless media. The term computer readable media as used herein includes both storage media and communication media.

Displaying means 114 such as, but not limited to, an LCD screen, a monitor, an LED screen, and the like. In some embodiments, displaying means 114 is electronically connected to
mobile device's processor 104 while in other embodiments, displaying means 114 is wirelessly connected to mobile device's processor 104. In yet further embodiments, displaying means 114 may include a control means, such as, but not limited to, a keyboard, a mouse, a touch screen, a stylus, and the like.

FIG. 2 is an illustrative system 200 of the invention according to one embodiment. Each driver being monitored is provided with a portable pin unit 202 with a unique electronic key 204, which serves as a unique identifier for the driver, wherein said portable pin unit 202 and electronic key 204 are registered in a central electronic database 206 at an evaluation center 208, such that solely the activities of the individual driver being assessed is recorded and transmitted to the evaluation center 208. The portable pin unit 202 includes means for selectively activating the telematic monitoring unit 210 in the primary vehicle 212 to start a monitoring session, where upon activation the driver's record 214 of operation of said primary and/or secondary vehicles 212, 212' and other variable parameters 214 concerning vehicle operation are recorded and reported to the evaluation center 208 to create the driver's risk assessment record 112. Portable pin unit 202 is conveniently small and may be worn on the driver's shirt, lapel, collar, tie, belt, pants or coat pockets, jackets, pocket books, etc. The portable pin unit 202 uses wireless technology, e.g. ZIGBEE, Bluetooth, Radio Frequency Identification ("RFID"), INFRARED, 802.11, Wireless Human Location Network ("WiHLoN") or any other present and future developed wireless communication systems and/or optical communication protocol, to communicate with the telematic monitoring unit 210.

As seen in FIG. 2, the registered primary vehicle 212 is correspondingly equipped with a telematic monitoring unit 210. The telematic monitoring unit 210 has a computer central processor 104' that interfaces with various vehicular sensors 216 to monitor and record the
driver's operation of the primary vehicle 212 to create the driver's risk assessment record 112.

Telematic monitoring unit 210 also includes communication means 108' of like if not identical means plus function as previously described in conjunction with the mobile device's communication means 108.

The telematic monitoring unit's computer processor 104' may be any type of processor, such as, but not limited to, a central processing unit (CPU), a microprocessor, a video processor, a front end processor, a coprocessor, a single-core central processor, a multi-core processor, and the like. The telematic monitoring unit's processor 104' is programmed to identify the driver being monitored via the portable pin unit's 202 unique electronic key 204 upon activation.

The telematic monitoring unit's communication means 108' transmits its recorded data to the evaluation center 208 via satellite or other wireless communication system, e.g. ZIGBEE, Bluetooth, RFID, INFRARED, 802.11, WiHLoN™ or any other present and future developed wireless communication systems and/or optical communication protocol. The telematic monitoring unit 210 is further provided with a Global Positioning System ("GPS") transponder 218 in communication with communication means 108' for transmitting at least one signal to the evaluation center 208 recording the driver's operation of the primary vehicle 212. The communication means 108' may communicate with either a geosynchronous (GEO) or Low Earth Orbit (LEO) satellite in a network. The evaluation center 208 is able to monitor signals received by a communication system 214, which is preferably a satellite network system, from each telematic monitoring unit 210.

As previously mentioned, if a driver owns, has access to, or will be operating a plurality of vehicles 212, 212', 212" during the monitoring sessions within the prescribed period, no additional portable pin unit 202 is required. However, each vehicle 212 being monitored, the
primary and/or secondary, must be equipped with a telematic monitoring unit 210 in communications with a variety of in-vehicle telematics, e.g. different sensors 216, 216', 216", within the vehicle 212 to obtain information concerning the status of various safety features, and the driver's operation of the vehicle 212. Upon activation with the portable pin unit 202 via its activation switch 220 (not shown), the driver's record 220 of his/her operation of said vehicles 212, 212' and other pertinent data elements 130 concerning the vehicle 212 are monitored, recorded and transmitted by the telematic monitoring unit 210 to an evaluation center 208 to generate said driver's risk assessment record 112. The driver's record 220 of vehicle operation may include a record of his/her turning ability 224, applied brake pressure 226, average speed 228, adherence to speed limits 230, car impact 232, and or other like operational information as are known and used in the arts. Pertinent data elements 130 may include but is not limited to any one or more of the following: information regarding the seatbelts, presence of air bags, state of the windshield wipers, and/or any other pertinent factor relating to the vehicle's 212 safe operations.

For purposes of illustration, in applying the within systems 100, 200 and methods of the invention, an objective driver score 122 may be derived from aggregating the weighted scores 116, e.g. a driver may've scored a weighted credit score of 90 (out of 100), weighted employment history score of 85 (out of 100), weighted driving experience score of 48 (out of 50), weighted social security score of 50 (out of 50), weighted driving record 220 score of 75 (out of 80), weighted address history score of 40 (out of 50), weighted insurance history score of 38 (out of 40), weighted accident history score of 45 (out of 50) and weighted driver's risk assessment record 112 score of 95 (out of 100) for an aggregate objective driver score 122 of 566.
out of a maximum of 600. In this example, the driver would be considered a responsible driver
with high insurability with minimal risk of incurring an insurance claim.

FIG. 3 is an illustrative screenshot 300 of an exemplary display 302 of the driver score
application program 108 displaying the driver's risk assessment record 112 according to one
embodiment of the invention. The driver score application 110 may also display in further detail
the driver's record 220 of his/her operation of said vehicles 212, 212' and other pertinent data
elements 130 concerning the vehicles 212, 212 being monitored. Also displayed maybe the
driver's objective driver score 122 based on the driver's risk assessment record 112, the
aggregate of the individual weighted scores 116 derived from the plurality of risk assessment
factors 118 and/or the driver's personal history 304. The driver's risk assessment factors 118
may include any one or more of the following: credit score, employment history, driving
experience, social security number for verification purposes, the driving record, address history,
insurance history, the number of outstanding tickets within a predetermined period, and/or any
other determinative risk assessment factors pertaining to the driver's insurability. The driver's
personal history 304 may include but is not limited to any one or more of the following: name,
age, sex, marital status, student status and/or any other personal historical data that may pertain
to the driver's insurability.

For purposes of illustration, in applying the within system and method of the invention, a
driver may have scored a weighted credit score of 90 (out of 100), weighted employment history
score of 85 (out of 100), weighted driving experience score of 48 (out of 50), weighted social
security score of 50 (out of 50), weighted driving record 304 score of 75 (out of 80), weighted
address history score of 40 (out of 50), weighted insurance history score of 38 (out of 40),
weighted accident history score of 45 (out of 50) and weighted driver's risk assessment 112
score of 95 (out of 100) for an aggregate objective driver score of 566 out of a maximum of 600. In this example, the driver would be considered a responsible driver with high insurability with minimal risk of incurring an insurance claim.

METHODS

FIG. 4 is a sample flowchart of an exemplary method 400 of determining a driver's insurability according to an embodiment of the invention. Method 400 comprises of providing each driver with a portable pin unit 202 with a unique electronic key 204 used as a unique identifier for the driver being assessed, and wherein said portable pin unit 202 includes means for selective activation of a telematic monitoring unit 210 in at least one vehicle 212 to start a monitoring session by monitoring the individual driver's operation of the at least one vehicle 212 in a manner that is independent of the vehicle 212 such that concurrent monitoring of a plurality of drivers of the same vehicle 212 can occur (step 402). In this manner, solely the activities of the driver being assessed is recorded and transmitted to the evaluation center 208. Therefore, if a plurality of drivers is operating the same vehicle 212 within the prescribed period, each driver's operation of the vehicle 212 is individually assessed and the assessment is not solely dependent on that particular vehicle 212.

Method 400 further comprises of providing a mobile device 100, which includes a computer central processor 104 positioned within, wherein the mobile device 100 is configured for communicating over a communication network 134 (step 404). Mobile device 100 may be any type of device as previously explained in conjunction with FIGs. 1-3 as previously stated herein.

Method 400 further comprises of providing computer executable instructions 132 readable by the mobile device's computer central processor 104 (step 406) and configured to
perform any one or more of the following: activate a driver score application 110 for communicating the results of a driver's risk assessment record 112 based on the driver's actual driving skills being monitored by in-vehicle telematics technology; determining and displaying the driver's risk assessment record 112 on the mobile device's displaying means 114; or generating an objective driver score 122 based on the driver's risk assessment record 112 and the aggregate of the individual weighted scores 116 derived from the plurality of risk assessment factors 118.

FIG. 5 is a sample flowchart of an exemplary method 500 of determining a driver score 122 according to an embodiment of the invention. As seen in FIG. 5, method 500 receives the driver's personal history 304 (step 502) in response to a series of questions posed to the driver, using for example a website or the driver score application 110 where the driver inputs his/her responsive information. Certain risk assessment factors 118 of the driver's personal history 304 are analyzed to derive individual weighted scores 116 using a computer implemented algorithm, wherein said individual weighted scores 116 are each distinct from an objective driver score 122 used to assess said driver's insurability.

Once the driver's personal history 304 is received (step 502), method 500 derives the individual weighted scores 116 from the varied risk assessment factors 118 in step 504, as further explained in FIG. 6, the system 100 receives registration of at least one primary vehicle 212 (step 506) that the driver will drive, or intends to operate during the monitoring sessions. The driver will be prompted to confirm whether there are additional drivers (step 508) having access to the registered primary vehicle 212 and if so, to register the other variable parameters 214 associated therewith, which may include but is not limited to: title, vehicle registration number and vehicle identification number for each vehicle 212 being registered, as well as the number of other
drivers, names, ages, student status and sex(es) of said other drivers having access to the primary vehicle 212 during the monitoring session.

Method 500 receives the registration of the variable parameters 214 (step 510) and may also prompt the driver to confirm whether the driver will be operating any secondary vehicles 212, 212', 212" (step 512). If so, the driver may register each secondary vehicle 212 where the system 100 receives the registration of the secondary vehicles 212, 212', 212" (step 514) as well as any other variable parameters 214 (step 516) associated therewith. If no secondary vehicle 212 is being registered, the method 500 receives the driver's risk assessment record 112 (step 518) as downloaded by the monitoring unit 210 to the evaluation center 208, where the driver's risk assessment record 112 is recorded and analyzed to derive a weighted driver's risk assessment score (step 520), wherein said weighted driver's risk assessment score is distinct from the objective driver score 122. Once the monitoring sessions are complete, method 500 generates the objective driver score 122 (step 522) based on the aggregate of the individual weighted scores 116 and the weighted driver's risk assessment score. Accordingly, the resulting objective driver score 122 is comprehensive, inclusive of pertinent personal risk assessment factors 118 and driver information that is individualized and specific to the driver.

Referring now to FIG. 6, which is a sample flowchart of an exemplary method 600 of deriving individual weighted scores 116 (step 504 of FIG. 5) based on the different risk assessment factors 118 of the driver's personal history 304 in accord with one embodiment of the invention. As seen in FIG. 6, method 600 receives for example the driver's credit score 308 (not shown) (step 602) and derives a weighted credit score 310 (not shown) (step 604), wherein said weighted credit score 310 (not shown) is distinct from an objective driver score 122. In alternate embodiments of the invention, in addition to the driver's credit score 122, the method 600 of the
invention may also evaluate additional elements 312, 312' (not shown) of the driver's credit history 314 (not shown), e.g. declarations of bankruptcy, the driver's debt to equity ratio, etc., to derive the weighted credit score 310. If the driver is unaware of his/her credit score 308, the method 600 may obtain the driver's credit score 308 either via an interface with a credit bureau or via a third party service provider upon proper authorization from the driver.

As seen in FIG. 6, the system 100 of the invention receives the driver's employment history 316 (not shown) (in step 606) to be weighted and scored. A driver's employment history 316 (not shown), in particular, the current employment status is important to the insurer as it is a good predictor of the driver's ability to pay future insurance premiums. Upon receipt of the driver's employment history 316, method 600 weighs various elements 312", 312"' of the driver's employment history 316, which may include but is not limited to, current employment status, number of years employed, length of time with current employer, number of stints of unemployment, duration of unemployment, etc., to derive a weighted employment history score 318 (not shown) (step 608), wherein said weighted employment history score 318 (not shown) is distinct from an objective driver score 122.

Method 600 also includes receiving the driver's driving record 220 (step 610). Here too, various elements 312, 312' of the driving record 34 are analyzed for insurability. Said elements 312, 312' may include but is not limited to, the number of years since the driver has been licensed, any driving suspensions, and/or revocations of the driver's license, etc. Said elements 312, 312' of the driving record 220 are analyzed and weighted to derive a weighted driving record score 318 (not shown) (step 612), wherein said weighted driving record score 318 is distinct from an objective driver score 122.
The environment where an individual driver operates or will operate their motor vehicles during an insurance term is an important component in assessing a driver's insurability. Statistics support the premise that most accidents occur on city highways. Even so, the risk of insuring a driver may differ for larger cities because of population density, e.g. insuring a resident of Manhattan may be riskier than a resident of Seattle, Washington. Accordingly, a driver's address history is an important component of the risk assessment factors considered for insurability. Here, method 600 receives the driver's address history (not shown) (step 614), analyzes and weighs the driver's address history to derive a weighted address history score (not shown) (step 616), wherein said weighted address history score is distinct from an objective driver score 122.

Method further comprises receiving the driver's social security number (not shown) (step 618) and will verify the driver's identity with the appropriate authorities. Once verified, method 600 derives a weighted social security score (not shown) (step 620), wherein said weighted social security score is distinct from an objective driver score 122. If the social security number cannot be verified with the appropriate authorities or it is determined to belong to another individual different from the identified driver, then it is understood that the weighted social security score reflect the discrepancy by being for example a really low weighted social security score. According to an embodiment of the invention, the weighted social security score may be disclosed to the potential insurer without disclosing the social security number provided by the driver. However, an insurer analyzing the different elements of an objective driver score 122, can immediately determine from the affected weighted social security score that insuring this driver is risky business. As such the
weighted social security score 326 serves as red flag, while still maintaining the confidentiality of the information provided by the driver.

In step 622, method 600 receives the driver's insurance history 328 (not shown) (step 622) where individual elements 312, 310', which includes but is not limited to any one or more of: any lapses in coverage, number of claims filed, frequency of claims, amounts paid for insurance claims on behalf of said driver, etc. are analyzed to derive a weighted insurance history score 330 (step 624), wherein said weighted insurance history score 330 is distinct from an objective driver score 122.

Additionally, in step 626 method 600 receives the driver's accident history 332 (not shown) (step 626) analyzes the same and derives a weighted accident history score 334 (not shown) (step 628), wherein said weighted accident history score 334 is distinct from an objective driver score 122. It is understood that if the driver had zero reported accidents, his weighted accident history score 334 will be reflective of the same and may be markedly higher than another driver with one or more reported accidents.

It is also understood that the order of the varied receiving steps for determining the different individual weighted scores 116 derived from the driver's personal history 304 as shown in FIG. 6 may vary. Likewise, the various risk assessment factors 118 of the personal history 304 used to derive individual weighted scores 116 may vary to include or delete other risk assessment factors 118 as more information becomes readily available and verifiable in the future.

**Hardware and Operating Environment**

This section provides an overview of example hardware and the operating environments in conjunction with which embodiments of the inventive subject matter can be implemented.
A software program may be launched from a computer readable medium in a computer-based system 100 to execute the functions defined in the software program. Various programming languages may be employed to create software programs designed to implement and perform the methods disclosed herein. The programs may be structured in an object-orientated format using an object-oriented language such as Java or C++. Alternatively the programs may be structured in a procedure-oriented format using a procedural language, such as assembly or C. The software components may communicate using a number of mechanisms, such as application program interfaces, or inter-process communication techniques, including remote procedure calls. The teachings of various embodiments are not limited to any particular programming language or environment. Thus, other embodiments may be realized, as discussed regarding FIG. 7 below.

FIG. 7 is a block diagram representing an article 700 according to various embodiments. Such embodiments may comprise a computer, a memory system, a magnetic or optical disk, some other storage device, or any type of electronic device or system. The article 700 may include one or more processor(s) 702 coupled to a machine-accessible medium such as a memory 704 (e.g., a memory including electrical, optical, or electromagnetic elements). The medium may contain associated information 706 (e.g., computer program instructions, data, or both) which, when accessed, results in a machine (e.g., the processor(s) 702) performing the activities previously described herein.

The principles of the present disclosure may be applied to all types of computers, systems, and the like, include desktop computers, servers, notebook computers, personal digital assistants, and the like. However, the present disclosure may not be limited to the personal computer.
It will be understood that each of the elements described above, or two or more together may also find a useful application in other types of systems and methods differing from the type described above.

While the principles of the disclosure have been described herein, it is to be understood by those skilled in the art that this description is made only by way of example and not as a limitation as to the scope of the disclosure. Other embodiments are contemplated within the scope of the present disclosure in addition to the exemplary embodiments shown and described herein. Modifications and substitutions by one of ordinary skill in the art are considered to be within the scope of the present disclosure.
CLAIMS

What is claimed is:

1. A method of determining a driver's insurability comprising:
   (a) providing each driver with a portable pin unit with a unique electronic key
       used as a unique identifier for the driver being assessed, and wherein said portable pin unit
       includes means for selective activation of a telematic monitoring unit in at least one vehicle to
       start a monitoring session by monitoring the individual driver's operation of the at least one
       vehicle in a manner that is independent of the vehicle such that concurrent monitoring of a
       plurality of drivers of the same vehicle can occur;
   (b) providing a mobile device, which includes a computer central processor
       positioned within, wherein the mobile device is configured for communicating over a
       communication network;
   (c) providing computer executable instructions readable by the mobile
       device's computer central processor and configured to perform any one or more of the following:
       (i) activate a driver score application program for communicating the results
           of a driver's risk assessment record based on the driver's actual driving skills as monitored by in-
           vehicle telematics technology;
       (ii) determining and displaying the driver's risk assessment record on the
           mobile device's displaying means; or
       (iii) generating an objective driver score based on the driver's risk assessment
           record and an aggregate of the individual weighted scores derived from the plurality of risk
           assessment factors.

2. The method of claim 1, further comprising receiving registration via the driver
score application program of a driver's first or secondary vehicles and personal history, which includes a plurality of risk assessment factors, wherein said risk assessment factors are each analyzed to derive individual weighted scores, and wherein said individual weighted scores are each distinct from an objective driver score used to assess said driver's insurability.

3. The method of claim 1, wherein the driver's personal history includes any one or more of the following: name, age, sex, marital status, and student status.

4. The method of claim 1, wherein said risk assessment factors includes any one or more of the following: credit score, employment history, driving experience, social security number, driving record, address history, insurance history, and the number of outstanding tickets within a predetermined period.

5. The method of claim 1, further comprising the step of equipping at least one vehicle with said telematic monitoring unit, whereupon activation the driver's operation of said vehicle and other pertinent data elements concerning the vehicle are monitored, recorded and transmitted to an evaluation center to generate said driver's risk assessment record.

6. The method of claim 1, further comprising the step of receiving registration for variable parameters concerning vehicle operation for the monitoring session.

7. The method of claim 5, wherein said variable parameters includes any one or more of the following: title, vehicle registration number for each vehicle being registered, vehicle identification number, number of other drivers, names, ages, sexes, and student status.

8. The method of claim 1, wherein said portable pin unit communicates with the telematic monitoring unit via wireless communication systems.

9. The method of claim 1, wherein said telematic monitoring unit communicates with the evaluation center via wireless communication systems.
10. The method of claim 1, further comprising driver record which includes any one or more of the following: a record of driver's turning ability, applied brake pressure, average speed, adherence to speed limits, or car impact.

11. A system for determining a driver score comprising:

(a) a portable pin unit which includes means for selective activation of a telematic monitoring unit in at least one vehicle to start a monitoring session by monitoring the individual driver's operation of the at least one vehicle in a manner that is independent of the vehicle such that concurrent monitoring of a plurality of drivers of the same vehicle can occur;

(b) a mobile device, which includes a computer central processor positioned within, wherein the mobile device is configured for communicating over a communication network; and

(c) a driver score application program;

(d) computer executable instructions readable by the mobile device's computer central processor configured to perform any one or more of the following:

(i) activate the driver score application program for communicating the results of a driver's risk assessment record based on the driver's actual driving skills being monitored by in-vehicle telematics technology;

(ii) determining and displaying the driver's risk assessment record on the mobile device's displaying means; or

(iii) generating an objective driver score based on the driver's risk assessment record and an aggregate of the individual weighted scores derived from the plurality of risk assessment factors.

12. The system of claim 11, further comprising receiving registration via the driver
score application program of a driver's first or secondary vehicles and personal history, which includes a plurality of risk assessment factors, wherein said risk assessment factors are each analyzed to derive individual weighted scores, and wherein said individual weighted scores are each distinct from an objective driver score used to assess said driver's insurability.

13. The system of claim 11, wherein the driver's personal history includes any one or more of the following: name, age, sex, marital status, and student status.

14. The system of claim 11, wherein said risk assessment factors includes any one or more of the following: credit score, employment history, driving experience, social security number, driving record, address history, insurance history, and the number of outstanding tickets within a predetermined period.

15. The system of claim 11, wherein the telematic monitoring unit, upon activation, collects information concerning the driver's operation of said vehicle and other pertinent-data elements concerning the vehicle are monitored, recorded and transmitted to an evaluation center to generate said driver's risk assessment record.

16. The system of claim 11, further comprising variable parameters concerning vehicle operation for the monitoring session that are received upon registration.

17. The method of claim 16, wherein said variable parameters includes any one or more of the following: title, vehicle registration number for each vehicle being registered, vehicle identification number, number of other drivers, names, ages, sexes, and student status.

18. The system of claim 11, wherein said portable pin unit communicates with the telematic monitoring unit via wireless communication systems.

19. The system of claim 11, wherein said telematic monitoring unit communicates with the evaluation center via wireless communication systems.
20. The system of claim 16, further comprising driver record which includes any one or more of the following: a record of driver's turning ability, applied brake pressure, average speed, adherence to speed limits, or car impact.
FIG. 1
FIG. 3

Driver's Risk Assessment Record

Driver's Record of Vehicle Operation
- -- --
- -- --

Turning Ability
Applied Brake Pressure
Average Speed
Adhering to Speed Limits
Car Impact

Data Elements

Objective Drive Score 556
Risk Assessment Factors
Personal History
Weighted Scores
Providing Each Driver With A Portable Pin Unit With A Unique Electronic Key Used As A Unique Identifier For The Driver Being Assessed, And Wherein Said Portable Pin Unit Includes Means For Selective Activation Of A Monitoring Unit In At Least One Vehicle To Start A Monitoring Session By Monitoring The Individual Driver's Operation Of The At Least One Vehicle In A Manner That Is Independent Of The Vehicle Such That Concurrent Monitoring Of A Plurality Of Drivers Of The Same Vehicle Can Occur.


Providing Computer Executable Instructions Readable By The Mobile Device's Computer Central Processor
START

Receive Driver's Personal History

Derive the Individual Weighted Scores

Receive Registration of Primary Vehicle

Any Additional Drivers?

Yes

Receive Registration of Variable Parameters

No

Any Secondary Vehicles?

Yes

Receive Registration of Secondary Vehicles

No

Receive Variable Parameters

Receive Driver's Risk Assessment Record

Derive Weighted Driver's Risk Assessment Record

Generate Objective Driver Score

END

FIG. 5
FIG. 7
INTERNATIONAL SEARCH REPORT

A. CLASSIFICATION OF SUBJECT MATTER
IPC(8) - G06Q 10/00 (2012.01)
USPC - 705/1.1

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC(8): G06Q 10/00 (2012.01)
USPC: 705/1.1

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
IPC(8): G06Q 10/00 (2012.01) (keyword limited - see terms below)
USPC: 701/1, 705/1.1, 141, 80 (keyword limited - see terms below)

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

<table>
<thead>
<tr>
<th>Category</th>
<th>Citation of document, with indication, where appropriate, of the relevant passages</th>
<th>Relevant to claim No.</th>
</tr>
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<tbody>
<tr>
<td>X</td>
<td>US 201/0030586 A1 (Taylor et al.) 04 February 2010 (04.02.2010), entire document, especially: para [0027]-[0028], [0030], [0033]-[0035], [0063], [0072], [0081], [0087], [0091], [0118]</td>
<td>1-20</td>
</tr>
<tr>
<td>A</td>
<td>US 2009/0082372 A1 (Burch) 03 April 2008 (03.04.2008), entire document</td>
<td>1-20</td>
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</tbody>
</table>

Further documents are listed in the continuation of Box C.

* Special categories of cited documents:
  "A" document defining the general state of the art which is not considered to be of particular relevance
  "E" earlier application or patent but published on or after the international filing date
  "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
  "O" document referring to an oral disclosure, use, exhibition or other means
  "P" document published prior to the international filing date but later than the priority date claimed
  "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
  "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
  "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
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