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Insurance Telematics

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***Abstract*: It has been observed, the insurers are not much keen on paying attention to the vehicle usage and related issues of the policy bearers. The initial insurance model does not compare the performance of the drivers in order to identify the safety margin of their driving as they do not have the values of certain parameters of the vehicle holders with respect to their driving. A considerable number of insurance organizations are planning to make use of the data they collect with the use of telematics to design a model that could forecast the risk for the policy holder and the policy benefits would be offered accordingly. The organizations and the policy holder, both, would benefit by granting certain privileges like bonus for no – claim and lower the premiums for the safe drivers. Accordingly, risky or rash drivers will have to pay extra charges. This does not guarantee, however, might encourage the drivers to adopt a driving with safety measures. Using the data obtained by sensors and other devices, this project will work to build a model that would predict the insurance automatically. Binary logistic regression along with the Machine Learning technique will be used to obtain the forecasting model. On the basis of the data received from the appropriate software used to weigh the values of the parameter, insurance telematics is an innovative technology that computes the Risk Profile of the individual, in this case, the driver or the policy holder.**

***Keywords*: ARM; Insurance; Policy holder; Forecasting Model; Predictive.**

1. Introduction

The concept of Insurance Telematics

The initial Insurance Policy is based not only on non-real time measures like the age of the driver, occupation or place of residence, car model and makeup of the vehicle, and desired average performance over the policy term, but the recently introduced Insurance Telematics is calculated based on real time parameters that includes actual mileage, average on road time, location of the driver, and the tendency of the driver while driving the vehicle. Certain insurance schemes are often labeled as Pay as You Drive, Pay How You Drive, also Manage How You Drive. And the information is gathered accordingly.

A. Current events in insurance telematics

The UBI programs are expected to flourish over the upcoming years. As per the recent survey, the number of policy holders add up to some 40 to 60 million in the United State altogether. These initiatives using vehicle installations are based on cutting edge technologies, e.g., UBI initiative utilizing data taking using the measurement device. However, the expense for hardware, including the cost for maintenance, installation, limits the scalability and in turn the efficiency of the UBI programs and affects their deployment. Insurance providers are therefore looking for efficient solutions. The cell phone and its usage during car drives has early on been identified as a valuable tool for intelligent systems of transportation. The use of wind-shield mounted smartphones, has been identified as a potential option, thanks to the efficiency of smartphones among the customers, the development within the telematics industry, and the ease of implementation of the working of smartphone using distribution of applications that can be used.

We all know smartphone is a initiator of technology, considering receivers for the various navigation systems using satellite technology globally, the first global positioning system receiver equipped handsets with receivers that work with the signals from the GPS. Further, the smartphone also provides audio-visual measures for user interaction prior to computations. At last, the connectivity and that too wireless of the smartphone provides an effective means for data sharing, avoiding an additional data plan and SIM card, required by other systems.

Please note that, is that automobile manufacturers are increasingly acquiring new vehicles with telematics capabilities that, importantly, does not require additional hardware. This technology, however, will take a lot of time, maybe years ahead, to reach effectively to the common people to a level where it would display a significant means of collecting UBI database. Resulting into, the smartphones are likely to maintain the upper hand for the upcoming multiple years as well. In spite of all the advantageous basics properties of the smartphone, based insurance telematics have not yet managed to enter the market on a large scale. Along the last few years, some pilot batches have been offered at market level, but no completely – fledged commercial programs are currently available.

B. Quality of the data received by the Smartphone

A staunch reason for the slow implementation of smartphone-driven Telematics is identified as the issues with data quality, and to be precise the dependency of measurement data. In simple words, the smartphone does not provide high or acceptable or desired quality so that the cutting-edge algorithms implemented in UBI designed hardware measurement devices

can be directly transferred to a smartphone application. A very good example is detection of harsh braking events, where thresholding the calculated change of speed typically gives a considerable number of false detections due to variations in the data acquisition speed.

In initial insurance telematics where the speed is captured directly from the vehicle, the captured speed is quite accurate but it might also be affected due to some quantization and offset effect. Thanks to the predictive sensing of the speed, the integrity along with the availability, and continuity of service are all quite high. To make use of the smartphone as the source of information, on the other end, the speed of the vehicle has to be calculated by some effective means. This speed of the data is accurate, but subject to quite frequent irregularities and disturbances in the data acquisition rate, the availability of the data is inferior compared with the speed data provided by the OBD outlet, because of the dependency on the conditions to the satellites with navigation technologies.

C. Challenges in smartphone-UBI

The very initial engineering challenge for well adaptation of smartphone-driven insurance telematics is to determine how to handle the lack of integrity of the data received by GNSS. The result is a data sequence with improved. Such enhancement of data quality is one significant aspect needed to be taken into consideration of smartphone-driven UBI systems, which will be discussed within this piece of article.

Number two engineering obstacle in the design of a smartphone based UBI system is to provide appropriate methods to ensure powerful driver scoring that is retrieved from the data with less availability of data capturing and low but enhanced integrity. It is now clear, the measurements we lose out on are not re-creatable, but if we seek after UBI measures for policy determinations the measurements may still be recovered. To provide an example, a harsh braking cannot be detected if the data covering the seconds of the events are lost, whereas a measure like smoothness of the trip can still be computed with some predetermined accuracy despite heavy loss of data.

This is another and a major issue to discuss within this piece of article. The number three challenge is the scoring validity, that is, the correlation amongst the measured figure of merits with the relating scoring and the actual risk profile of the driver; which has to be determined using database information of statistics. To cross check the validity of score includes research and deep diving into factors such claims that drivers who take initiative for UBI programs per se are safer drivers, than those who do not sign up. Studies of the validity are of ultimate importance, and not only be handled by the engineers designing and operating the systems. As per the information we discussed so far, it is beyond the scope of this paper.

D. Contributions and outline

As we are now discussing, a simple yet effective and diverse definition of UBI or insurance telematics is given as: Insurance telematics defines the process of using sensor measurements to extract relevant figure of merits of a car trip driven by a driver. The Figure of Merits are later used to calculate a profile mentioning driver safety, that is a reading based on a number of drives taken by the driver, where the reading will affect the driver's insurance plan of policy. On the basis of the definition above, some remarks are in proper order. Now, we discuss how the collected Figure of Merits and the respective characterization in terms of the significance, the affect on the driving style and stillness of the vehicle can be used for the designing the reading process. To be precise the effectiveness of the driver score with respect to the properties of the Figure of Merits are of importance for a successful UBI initiative, but also a main concern is that the one holding the Policy should be notified timely about the score of his/her profile.

E. Characterization of figure of merits

The Figure of Merits are by various means computations from the values of measurements of sensors defined by their respective accuracy, integrity, continuity of service and availability all together. The effect of the quality of data on the Figure of Merits is a not a difficult task to determine, because it depends on the relation within the measurements of sensor and the Figure of Merits and the length of time during which the events and happenings which build up the Figure of Merits usually are registered. So far it is clear, it is an easier task to measure a Figure of Merits that is dependent on events that have quite a long duration, for example, the smoothness over the trip, as opposed to a Figure of Merits which has transient events like several harsh braking events. Similarly, it is a very easy task to measure a Figure of Merits with extremely high observability such as the elapsed time of a trip, as different than measuring the amount of data.

2. Results

The system thus successfully shows and computes a Driver Profile that is retrieved and built depending upon the information and database collected from the system. This will ensure to draw or design a Insurance System according the driver and style of driving, this ensures optimum usage of the resources, encourages the drivers to drive responsibly and promotes financial benefits and health safety as well.

3. Conclusions

In this piece of article, this paper, we have put in our best efforts to study and discuss the obstacles involved in changing a UBI initiative from a program that uses designed hardware connected to the vehicle electrically, to an initiative based on a single smartphone as a measurement device and a device for communicating as well. Along with representing the smartphone as the inbuilt device in the vehicle, the probabilities to feedback the data to the driver increase significantly, thnk you to the effective resolution screen, audio as well as visual means, but also the remotely located database can be accessed

quite effectively. We have portrayed the risk of providing the driver with information that designs the risk profile, because it may be received in an incorrect way. According to this, the design of driver feedback has to be considered on a serious basis in the design of any smartphone-based Telematics system.

References

[1] Y. Zhao, “Telematics: safe and fun driving,” IEEE Intelligent Systems, vol. 17, pp. 10–14, Jan. 2002.
[2] “Insurance telematics report 2013.” Telematics update, 2013.
[3] Y. Zhao, “Mobile phone location determination and its impact on intelligent transportation systems,” IEEE Trans. Intell. Transp. Sys., vol. 1, pp. 55–64, Mar. 2000.
[4] N. Arun Kumar, “Disruptive Technology for Auto Insurance Entrepreneurs”.
[5] P. Händel, J. Ohlsson, M. Ohlsson, I. Skog and E. Nygren, "Smartphone-Based Measurement Systems for Road Vehicle Traffic Monitoring and Usage-Based Insurance," in *IEEE Systems Journal*, vol. 8, no. 4, pp. 1238-1248, Dec. 2014.