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Usage based Vehicle Insurance

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Abstract —Insurance On The Basis Of Driving Style (IOTBODS) which is an advanced product form in usage-based insurance (UBI) for a vehicle, takes driving style and behavior into consideration in its actuary process. IOTBODS insurance product is supported by refinement and analysis based on raw driving data of insured vehicles, and the very analysis process, which is based on accelerometer data, helps to recognize the risk level of each driving behavior by finding the relationship between them. Even if studies on risk level determination have been done adequately, research on feedback and presenting of risk evaluation results for the drivers of insured vehicles have not been reported much. In the proposed system, the user will get the insurance on the basis of their driving style. If the user is driving a vehicle without urgent braking, harsh braking, acceleration, rapid turn, sudden turn, cutting lane in speed i.e. rash driving; then the user will get more benefits. If the user does rash driving then the user will get lesser benefits of insurance.

Keywords- Usage Based Insurance, Driving Styles, Vehicle Insurance.

I. INTRODUCTION

The current pricing policy of automotive insurance companies around the world is based on traditional factors, such as age, location of residence, history of accidents and traffic violations. This means that all customers pay similar prices for similar factors, despite potentially large variations in their driving habits. The emerging telematics-based usage-based insurance (or pay-how-you-drive programs). Usage-based insurance (UBI) relies on the collection of each driver's data using various technologies (OBD-II, Smartphone, or Hybrid OBD-Smartphone) to calculate the risk score during a monitoring period, which can reflect the probability of getting involved in an accident.

UBI provides a promising way to differentiate safe drivers from risky ones, which forms the basis for risk categorization and, thus, for subsequent discounts or surcharges on premiums depending on driving behavior. The proposed system detects user location and the condition when an actual accident occurred. In propose system, the system can detect fraud insurance claim and authentic insurance claim. The authenticity of the accident identified by accelerometer reading. the system also poses the capability to categories user driving style.

II. EXISTING SYSTEM

In the existing system user claim insurance after an accident. As per repairing cost he/she get money. Disadvantages of the existing system are:

- Users can claim fraud insurances.
- Users who follow all rules and maintain their vehicle can't get proper benefits of the insurance

III. PROPOSED SYSTEM

Each driving data recorded and store to the database for evaluating and offering the exact amount of insurance policy driving data like harsh braking, accretion, lane cutting in speed will be collected using accelerometer and GPS location with incident date and time. This data is helpful to the insurance company to calculate the risk analysis and chances of getting accident recovery claims. It will be also useful to verify accident incident information explain by the consumer. Analysis data may be used for educating people about driving sense and analyzing the driving behavior of the people.

IV. SYSTEM DESIGN

1. Algorithm

The Knuth Morris Pratt Algorithm is a string searching algorithm, that searches for the frequency of a "word" W within the main "text string" S so that when a mismatch occurs, the word embodies satisfactory details to determine where the next match could begin, thus bypassing re-matching of previously matched characters. This algorithm is used to match the driving styles of the user in an effective manner. The algorithm will give enhanced results for such large sets of data.

2. Hardware Requirements

i.	System	:	Intel I3 Processor and above.
ii.	Hard Disk	:	20 GB.
iii.	Monitor	:	15 VGA Color.
iv.	Ram	:	4 GB.
v.	Mobile	:	Android
vi.	Mouse	:	Logitech

3. Software Requirements

i.	Operating system	:	Windows 7 and above.
ii.	Coding Language	:	Java 1.8
iii.	Tool Kit	:	Android 2.3 and above
iv.	IDE	:	Android Studio
v.	Database	:	SQLite, MySQL

4. Architecture

The entire module would be based on the client-server architecture. It would have the android application deployed on the user's phone device which would have all the basic features including the status of the driving mode and also detection of an accident or rash driving using the KMP Algorithm. Whereas the Web would host the features attributed to the Insurance company which would provide all those conventional features along with the additional features regarding the objective of the proposed methodology.

The module is also adaptive to analyze the detection of rash driving or accidents from the inputs received from the devices deployed. The system continuously checks for any signs of driving patterns or accidents and if any discontinuous pattern is found then the user is alerted immediately. These records are not only helpful in detecting accidents but also in detecting rash driving or dynamic driving styles.

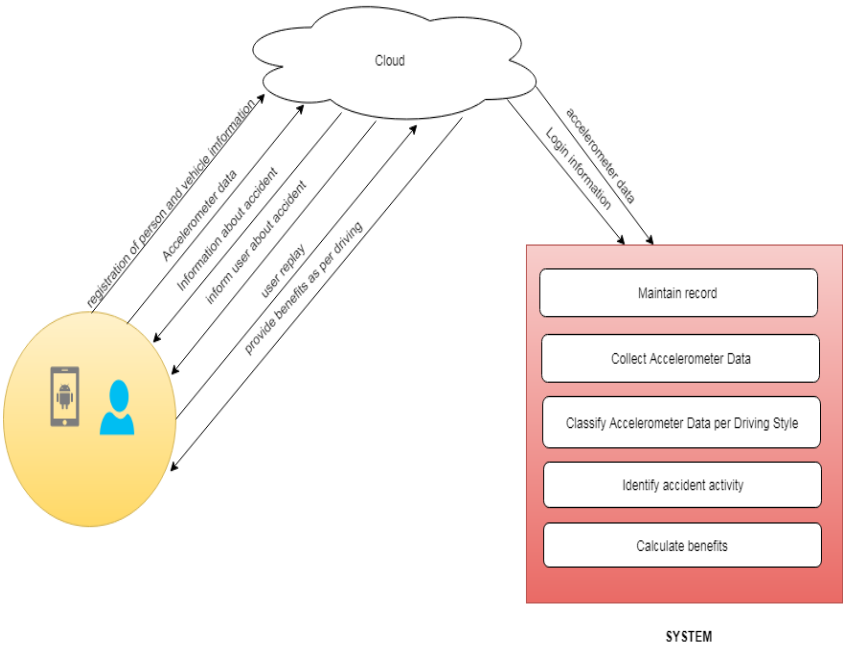

Figure. 1. Block Diagram

V. MATHEMATICAL MODEL

Let *S* be the Whole system which consists:

S= {*IP*, *Pro*, *OP*}. Where

A. *IP* is the input of the system.
B. *Pro* is the procedure applied to the system to process the given input.
C. *OP* is the output of the system.

A. Input:

IP = {I}. Where,

I is a set of data, provided as an input.

B. Procedure:

Step1: User has to do registration and login into the system.

Step 2: Verify the information into the database.

Step 3: Extract the data of the vehicle.

Step 4: Proposed work deals with accelerometer data, latitude-longitude (addressing data) using a haversine algorithm.

Step 5: The methodology comprised of three phases, firstly user registers and logins.

Step 6: Driving data or information of the user driving is updated on the server.

Step 7: If accidents are claimed it can be checked by the various authorities.

Step8: As per the detailed information or driving data of the user the relevant insurance policy is provided.

C. Output:

Detection of accidents and claiming the insurance policy as per the users driving data

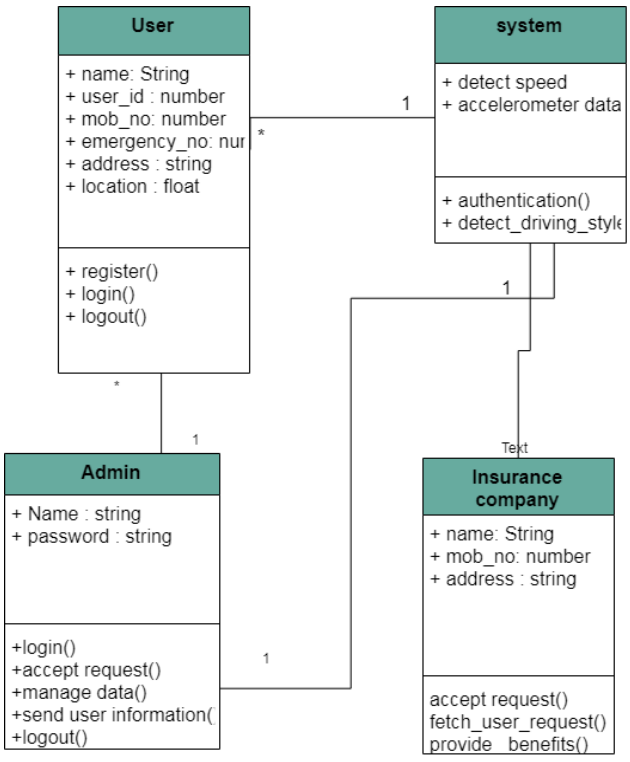

Figure. 2. Class Diagram

VI. CONCLUSION

The system can easily detect accidents and rash driving efficiently using the KMP Algorithm. Also, the location of the user can be traced in such critical times. The driving data gathered would be useful in policy-making for insurance companies and to give better options of various policies according to the user driving styles. This fulfills the objective of the Usage Based Insurance (UBI) successfully.

VII. FUTURE SCOPE

Although there are many people purchasing different types of insurance policies a few of them only fully aware of the benefits of these policies. Insurance covers are something that one should be fully aware. In general, the insurance policy provides protection against loss, threat and insecurity. The Indian insurance industry has changed speedily in the demanding economic environment throughout the world. In the current scenario, the insurance companies in India have become fiercer in nature and are allocating appropriate distribution channels to get the maximum profits and serve customers in manifold ways.

The future expansion of the insurance sector will depend on how effectively the insurers are able to come up with product designs suitable to our context and how successfully they are able to change the insights of the Indian consumers and make them aware of the insurable risks they might possess. The future growth of insurance also depends on how service-oriented insurers are going to be.

From the success of the project implementation, we can conclude that the software, when deployed in the Insurance Industry in India, would help them minimize their losses by eliminating fraud insurance claims by the customers along with discounting genuine customers in near future. Also, the data of the driving styles recorded would be beneficial in future policy-making or any such formulations. This system can also be standardized and synced with regulatory bodies such as the RTO, IRDA, etc. for better law enforcement and compliance purposes. The detection of an accident can be helpful in providing immediate support from the nearest Hospital or Health Care Centers. With such features, if introduced in the insurance industry, it would not only be beneficial for the industry but also for the genuine customers.

REFERENCES

[1] L. Zhou, Q. Chen, Z. Luo, H. Zhu, and C. Chen, “Speed-based location tracking in usage-based automotive insurance,” in Distributed Computing Systems (ICDCS), 2017 IEEE 37th International Conference on. IEEE, 2017, pp. 2252–2257.

[2] P. Handel, J. Ohlsson, M. Ohlsson, I. Skog, and E. Nygren, “Smartphone-based measurement systems for road vehicle traffic monitoring and usage-based insurance,” IEEE Systems Journal, vol. 8, no. 4, pp. 1238–1248, 2014.

[3] Y. Zhang, Y. Mao, and S. Zhong, “Joint differentially private gale–shapley mechanisms for location privacy protection in mobile traffic offloading systems,” IEEE Journal on Selected Areas in Communications, vol. 34, no. 10, pp. 2738–2749, 2016.

[4] V. Bindschaedler and R. Shokri, “Synthesizing plausible privacy preserving location traces,” in Security and Privacy (SP), 2016 IEEE Symposium on. IEEE, 2016, pp. 546–563.

[5] Y. Li, L. Zhou, H. Zhu, and L. Sun, “Privacy-preserving location proof for securing large-scale database-driven cognitive radio networks,” IEEE Internet of Things Journal, vol. 3, no. 4, pp. 563–571, 2016.