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USAGE-BASED AUTOMOTIVE INSURANCE SYSTEM

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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 vehicle, takes driving habit 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 propose system user will get the insurance on the basis of their driving style. If user drive vehicle without urgent breaking, harsh breaking, acceleration, rapid turn, sudden turn, cutting lane in speed i.e. rash driving; then user will get more benefits. If user do rash driving then user will get less benefits of insurance.

Key Words: location privacy, usage-based automotive insurance, elastic pathing.

1.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 behaviour.

Propose system detect user location and the condition when actual accident occurred. In propose system, system can detect fraud insurance claim and authentic insurance claim. Authenticity of accident identify by accelerometer reading. system also poses capability to categories user driving style.

2.1. Existing system

Calculating insurance premiums based only on demographic characteristics such as age, number of years holding a driving licence etc., personal driving characteristics either travel and/or driving behavioural are slowly incorporated into insurance models. In exiting system user claim insurance after accident. As per repairing cost he/she gets money.

2.2. Disadvantages of existing system

- Users can claim fraud insurances.
- Users who follow all rules and maintain their vehicle cant get proper benefits of the insurance

3. HEADING

Each driving data recorded and store to database for evaluating and offering exact amount of insurance policy driving data like harsh breaking, acceleration, lane cutting in speed will be collected using accelerometer and GPS location with incident date and time. This data is helpful to 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 consumer. Analysis data may be used for educating people about driving sense and analyzing driving behavior of the people.

3.1. Advantages of propose system

- Fraud insurance claim get eliminated.
- Users driving style could be capture.

4. Applications

- Applications such as characterizing driving styles or detecting dangerous events can be developed.
- Rash driving can be detected.
- Usefull for finding location when user is using the system.
- Usefull for all vehicle companies for providing relevant insurance.

5. SYSTEM REQUIREMENTS

5.1. SOFTWARE REQUIREMENTS

- Operating system : Windows XP Professional/7.
- Coding language : java/Android

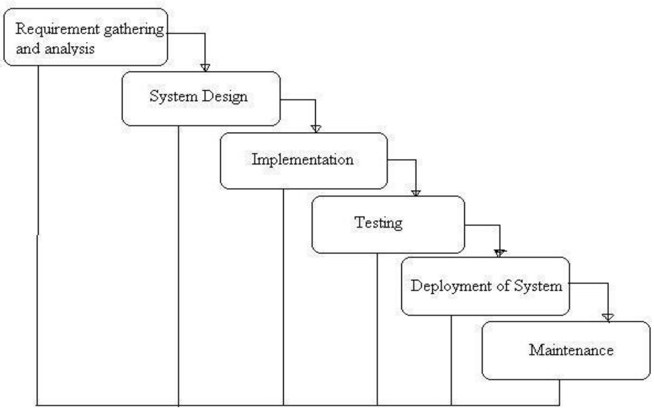
5.2. HARDWARE REQUIREMENTS

- **System Processors : Core2Duo**
- **Speed : 2.4GHz**
- **Hard Disk : 150GB**

6. MODULES

PROJECT PLAN
PROJECT ESTIMATES
We are using waterfall model for our project estimation.

General Overview of "Waterfall Model"



6.1. Requirement gathering and analysis:

In this step of waterfall we identify what are various requirements are need for our project such are software and hardware required, database, and interfaces.

6.2. System Design:

In this system design phase we design the system which is easily understood for end user i.e. user friendly.
We design some UML diagrams and data flow diagram to understand the system flow and system module and sequence of execution.

6.3. Implementation:

In implementation phase of our project we have implemented various module required of successfully getting expected outcome at the different module levels.
With inputs from system design, the system is first developed in small programs called units, which are integrated in the next phase. Each unit is developed and tested for its functionality which is referred to as Unit Testing.

6.4. Testing:

The different test cases are performed to test whether the project module are giving expected outcome in assumed time.
All the units developed in the implementation phase are integrated into a system after testing of each unit. Post integration the entire system is tested for any faults and failures.

6.5. Deployment of System:

Once the functional and nonfunctional testing is done, the product is deployed in the customer environment or released into the market.

6.6. Maintenance:

There are some issues which come up in the client environment. To fix those issues patches are released. Also to enhance the product some better versions are released. Maintenance is done to deliver these changes in the customer environment.

All these phases are cascaded to each other in which progress is seen as flowing steadily downwards like a waterfall through the phases. The next phase is started only after the defined set of goals are achieved for previous phase and it is signed off, so the name "Waterfall Model". In this model phases do not overlap.

7. Data Description:

Describing and documenting data is essential in ensuring that the researcher, and others who may need to use the data, can make sense of the data and understand the processes that have been followed in the collection, processing, and analysis of the data. Research data are any physical and/or digital materials that are collected, observed, or created in research activity for purposes of analysis to produce original research results or creative works.

8. Functional model and Description:

8.1. Performance Requirement

Performance of the functions and every module must be well.
The overall performance of the software will enable the users to work efficiently.

8.2. Safety Requirement

The application is designed in modules where errors can be detected and fixed easily.
This makes it easier to install and update new functionality if required.

8.3. Security Requirement

User's all details are confidentiality. Data is modified by authorized person in authorized manner. User need to go throw authentication process. Permissions to be assigned to All Authenticated entities

9. ALGORITHM

KMP (Knuth Morris Pratt)

The **Knuth–Morris–Pratt string-searching algorithm** (**KMP algorithm**) searches for occurrences of a "word" W within a main "text string" S by employing the observation that when a mismatch occurs, the word itself embodies sufficient information to determine where the next match could begin, thus bypassing re-examination of previously matched characters.

Steps for KMP algorithm

Step 1: Initialize the input variables:

n = Length of the Data.

m = Length of the Pattern.

u = Prefix –function of pattern(p).

q = Number of elements matched.

Step 2: Define the variable:

q=0, the beginning of the match.

Step 3: Compare the first element of the pattern with first element of Data.

If match is not found, substitute the value of u[q] to q.

If match is found, then increment the value of q by 1.

Step 4: Check whether all the pattern elements are matched with the data elements.

If not, repeat the search process.

If yes, print the number of shifts taken by the pattern.

Step 5: look for the next match.

- **Haversine Algorithm**

Haversine is a waveform that is sinusoidal in nature, but consists of a portion of a sine wave superimposed on another waveform. The input current waveform to a typical off-line power supply has the form of a haversine.

The haversine formula is used in electronics and other applications such as navigation. For example, it helps in finding **out the distance between two points on a sphere.**

The haversine formula determines the great-circle distance between two points on a sphere given their longitudes and latitudes.

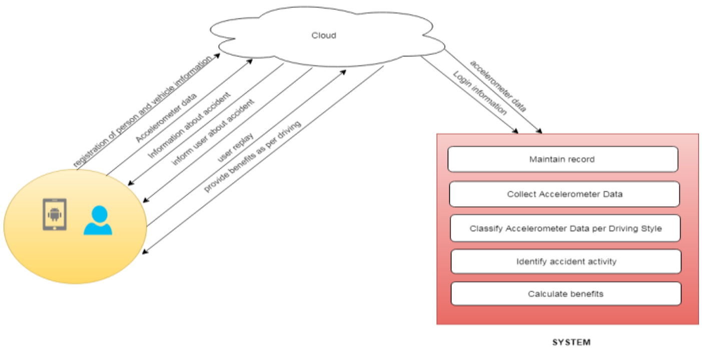
Haversine algorithm to calculate the distance from target point to origin point

1. R is the radius of earth in meters.
   Lat_O = latitude of origin point, $Long_O$ = longitude of origin point
   Lat_T= latitude of target point, $Long_T$= longitude of target point
2. Difference in latitude = Lat_O-Lat_T
   Difference in longitude = $Long_O$ -$Long_T$
3. Φ =Difference in latitude in radians
   Λ =Difference in longitude in radians
   O= Lat_O in radians.

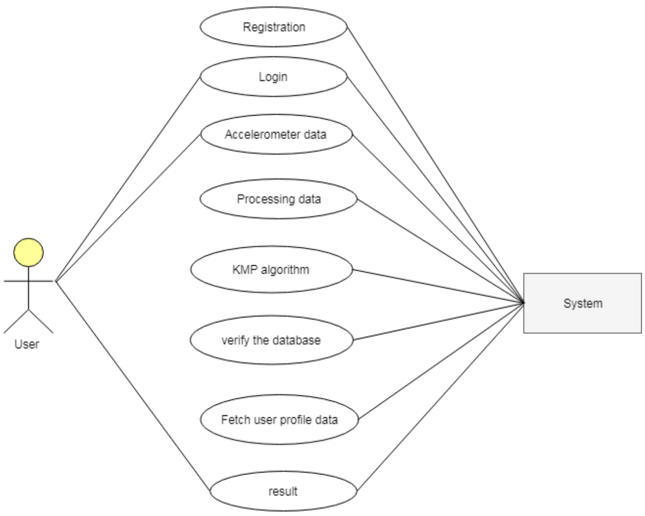
T= Lat_T in radians.

4. A= sin(Φ/2) * sin(Φ/2) + cos(O) *cos(T)*sin(Λ/2)*sin(Λ/2)
5. B= min(1,sqrt(A))
   Distance = 2*R*B

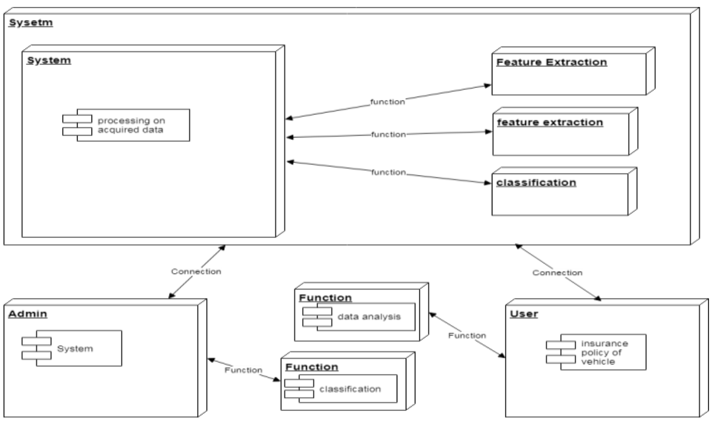
10. ARCHITECTURAL DESIGN:



10.1 USERCASE



10.2. DEPLOYMENT



11. Problem statement:

To detect fraud claims and offer accurate insurance policy to consumers based on their driving profile. To develop a company friendly and user friendly insurance system.

12. CONCLUSIONS

The Indian insurance industry cannot continue its old practices. Insurers in India have to keep pace with the changing times and innovations. They have to learn the Lessons Of Excellence from other countries where changes are occurring at a fast pace. The challenges are apparent before the insurers. Propose system offer better insurance system which offers user insurance on the basis of their use. Propose system also help to reduce fraud insurance claims.

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