



INTELLIGENT VEHICLE DAMAGE ASSESSMENT & COST ESTIMATOR FOR INSURANCE COMPANIES USING AI



IBM NALAIYA THIRAN

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CHAPTER - 1

INTRODUCTION

1.1 PROJECT OVERVIEW

In today's world, Vehicles are increasing heavily. Because of increasing the vehicles, accidents are very common because the peoples are driving a vehicles very fastly on the road. The people claim the money for repair the vehicles through vehicle insurance when the accident happens. Because of incorrect claims, the company behaves badly and doesn't make payments currently. This happens due to claims leakage, the claims leakage refers to the difference between the amounts secured by the company to the amount that company should have secured based on the claims. Still the damage to the vehicles is examined clearly and it will take more time to claim the process according to the company policy. Although the company does one's best to speed up the claiming process delay. Differentiate the proposed system that is maybe speed up the vehicles damage that can be check in process. Just by sending the image containing a damaged vehicles and can system perform vehicles damage detection in a minute rather than hours if it is inspected visually. The system can utilize machine learning approach as well as AI to decide the damage analysis, location of the damage as well as severity of the damage.

1.2 PURPOSE

In today's world, Vehicles are increasing heavily. Because of increasing the vehicles, accidents are very common because the peoples are driving acarvery fastly on the road. The people claim the money for repair the car through vehicle insurance when the accident happens. Because of incorrect claims, the company behaves badly and doesn't make payments currently. This happens due to claims leakage, the claims leakage refers to the difference between the amounts secured by the company to the amount that company should have secured based on the claims.

CHAPTER – 2

LITERATURE SURVEY

2.1 EXISTING PROBLEM

In this literature survey several methods have been proposed for detection of car damage. Srimal et al. [4] proposed a solution which uses 3DComputerAided Design for the discernment of car damage from the picture, the system only detect damage at edge portion only. Detection of the car damage through CAD software requires some knowledge about the software. S Gontscharovetal [5] ,the proposed system designed by using YOLO(you only look once)algorithm to detect tha car damage, Here the multi sensor data fusion technique is allows to locate the portion of damage more accurately and performs detection faster compared to other algorithms which is fully automatic and doesn't require much human intervention. Phyu Mar Kyuet al[3], the proposed system uses deep learning based algorithm are VGG16andVGG19 damaged car detection in the real world. This algorithm notice the severity of the damaged car based on the location. Finally the author concludes that L2 regularization work greater. Girish Net al [2], the proposed system uses vehicle damage detection technique depends on transfer learning and mask RCNN, The mask regional convolution neural network determines a damaged car by its position and estimate the depth of the damage. A Neela Madheswari et al [1], the proposed system uses convolution neural network is use to accept that image contains a car damage or not. It take as great opportunities to attempt by classifying the car damage into different classes.

2.2 REFERENCES

- Girish N, Mohammed Aqeel Arshad, car damage detection using machine learning.
- S. Gontscharov, H Baumgartel, A.Kneifel, and K.-L. Krieger, Algorithm development for minor damage identification in vehicle bodies using AI
- Phyu Mar Kyu, Vehicle damage detection and classification, faculty of information technology king Mongkut's institute of technology ladkrabang Bangkok, Thailand.
- Pei Li, Bingyu Shen, and Weishan Dong. 2018. An anti-fraud system for car insurance claim based on visual evidence.ar
- WA Rukshala Harshani and Kaneeka Vidanage. 2017. Image processing based severity and cost prediction of damagesin the vehicle body. A computational intelligence approach. In 2017 National Information Technology Conference.
- Najmeddine Dhieb, Hakim Ghazzai, Hichem Besbes, and Yehia Massoud. 2019. A very deep transfer learning model for vehicle damage detection and localization. In2019 31st International Conference on Microelectronics (ICM).
- Kalpesh Patil, Mandar Kulkarni, Anand Sriraman, and Shirish Karande. 2017. Deep learning based car damage classification. In 2017 16th IEEE International Conference on Machine Learning and Applications (ICMLA)

2.3 PROBLEM STATEMENT DEFINITION

Creating a problem statement to understand your customer's point of view. The Customer Problem Statement template helps you focus on what matters to create experiences people will love.

Our main aim is to make a Smart medicine box for those users who regularly take medicines and the prescription of their medicine is very long as it is hard to remember for patients and their caregivers.

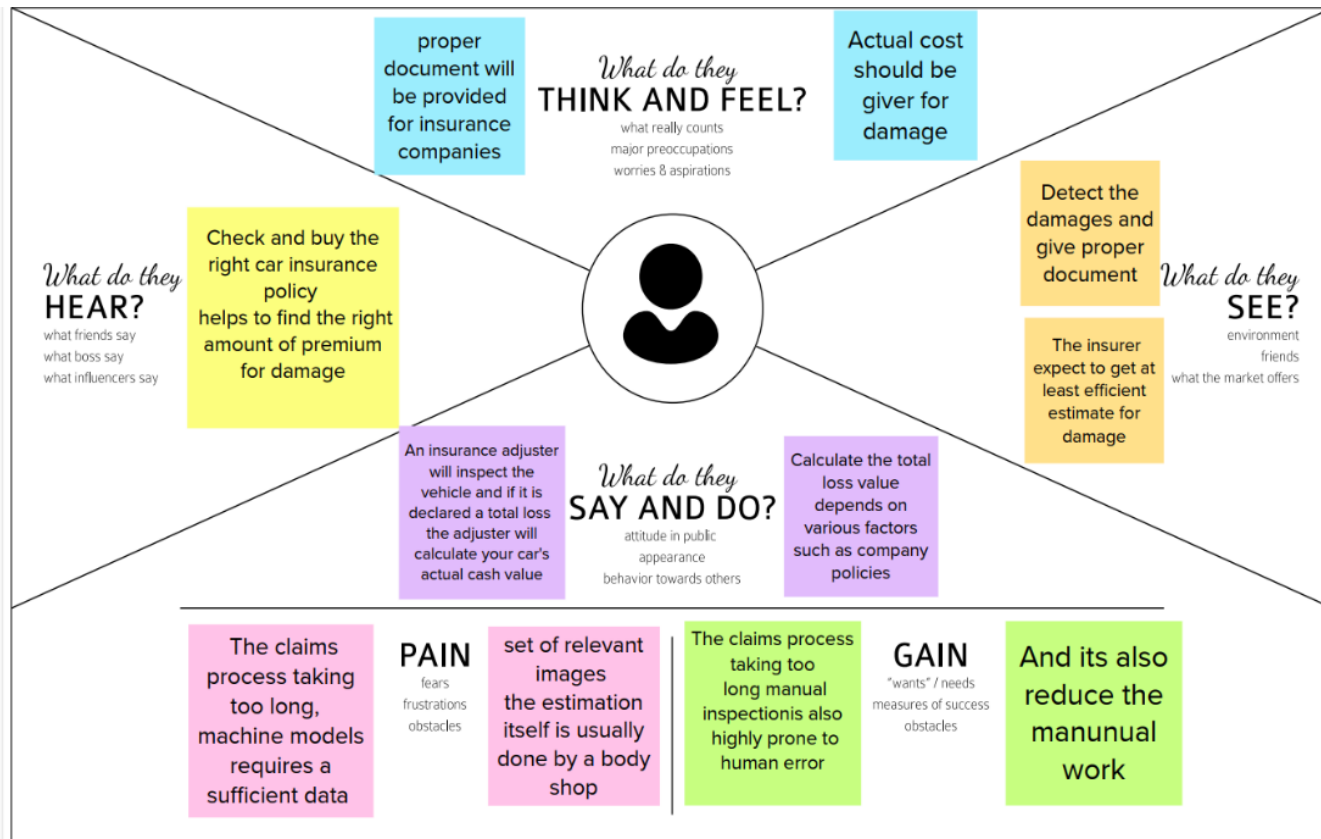


CHAPTER - 3

IDEATION & PROPOSED SOLUTION

3.1 Empathy Map Canvas

An empathy map is a simple, easy-to-digest visual that captures knowledge about a user's behaviors and attitudes. It is a useful tool to help teams better understand their users. Creating an effective solution requires understanding the true problem and the person who is experiencing it. The exercise of creating the map helps participants consider things from the user's perspective along with his or her goals and challenges.




3.2 IDEATION & BRAINSTORMING

Brainstorming provides a free and open environment that encourages everyone within a team to participate in the creative thinking process that leads to problem-solving. Prioritizing volume over value, out-of-the-box ideas are welcome and built upon, and all participants are encouraged to collaborate, helping each other develop a rich number of creative solutions.

Step-1: Team Gathering, Collaboration and Select the Problem Statement




This step includes the formation of a team, collaborating with the team by collecting the problems of the domain we have taken and consolidating the collected information into a single problem statement.


Template



Brainstorm & idea prioritization


Use this template in your own brainstorming sessions so your team can unleash their imagination and start shaping concepts even if you're not sitting in the same room.

 10 minutes to prepare
 1 hour to collaborate
 2-8 people recommended



Before you collaborate

A little bit of preparation goes a long way with this session. Here's what you need to do to get going.

 10 minutes

A

Team gathering

Define who should participate in the session and send an invite. Share relevant information or pre-work ahead.

B


Set the goal

Think about the problem you'll be focusing on solving in the brainstorming session.

C

Learn how to use the facilitation tools


Use the Facilitation Superpowers to run a happy and productive session.

[Open article](#) 

1


Define your problem statement

What problem are you trying to solve? Frame your problem as a How Might We statement. This will be the focus of your brainstorm.

 5 minutes


PROBLEM


How might we [your problem statement]?





Key rules of brainstorming


To run a smooth and productive session


 Stay in topic.

 Encourage wild ideas.

 Defer judgment.

 Listen to others.

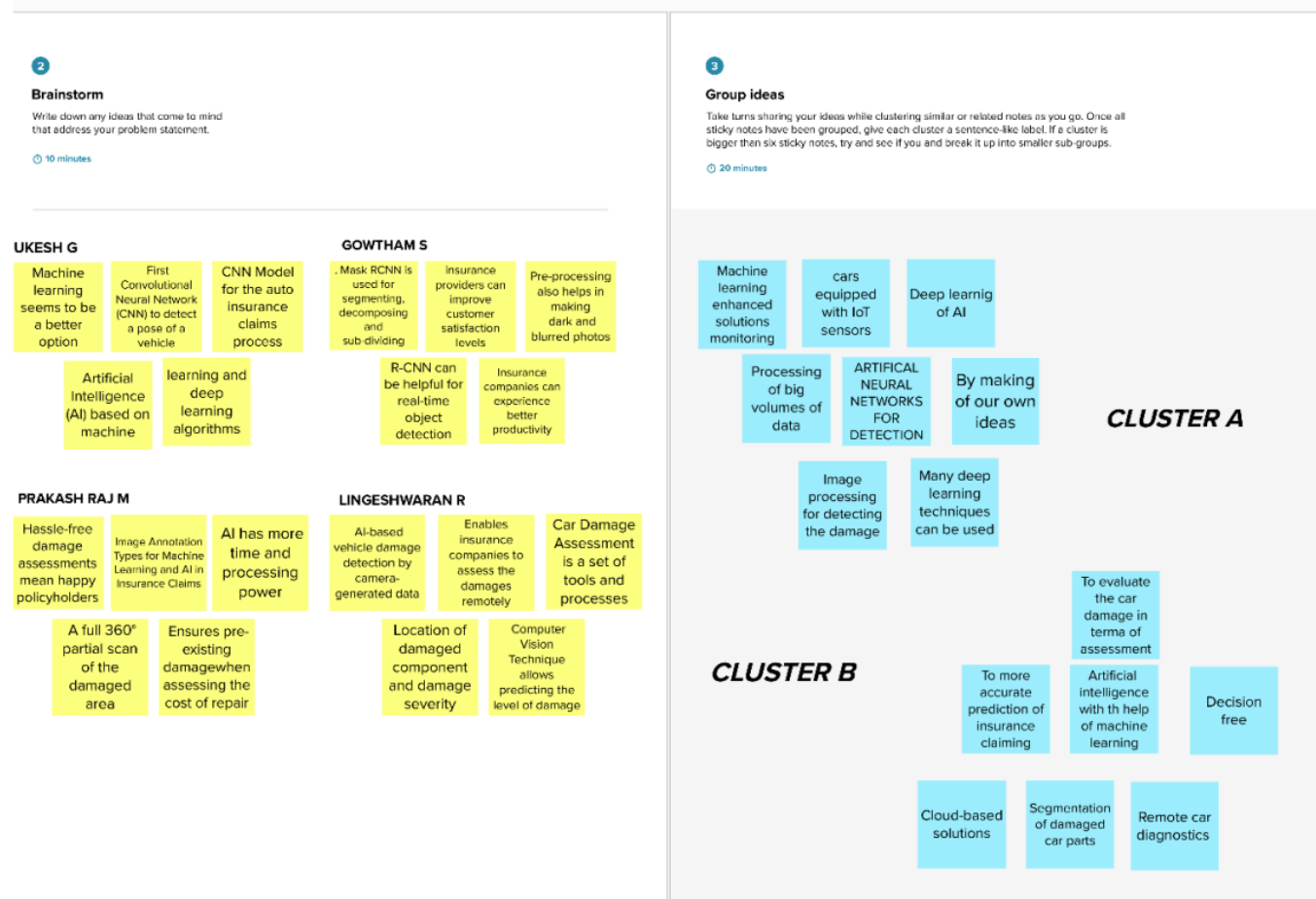
 Go for volume.

 If possible, be visual.

Step 2: Brainstorm, Idea Listing and Grouping

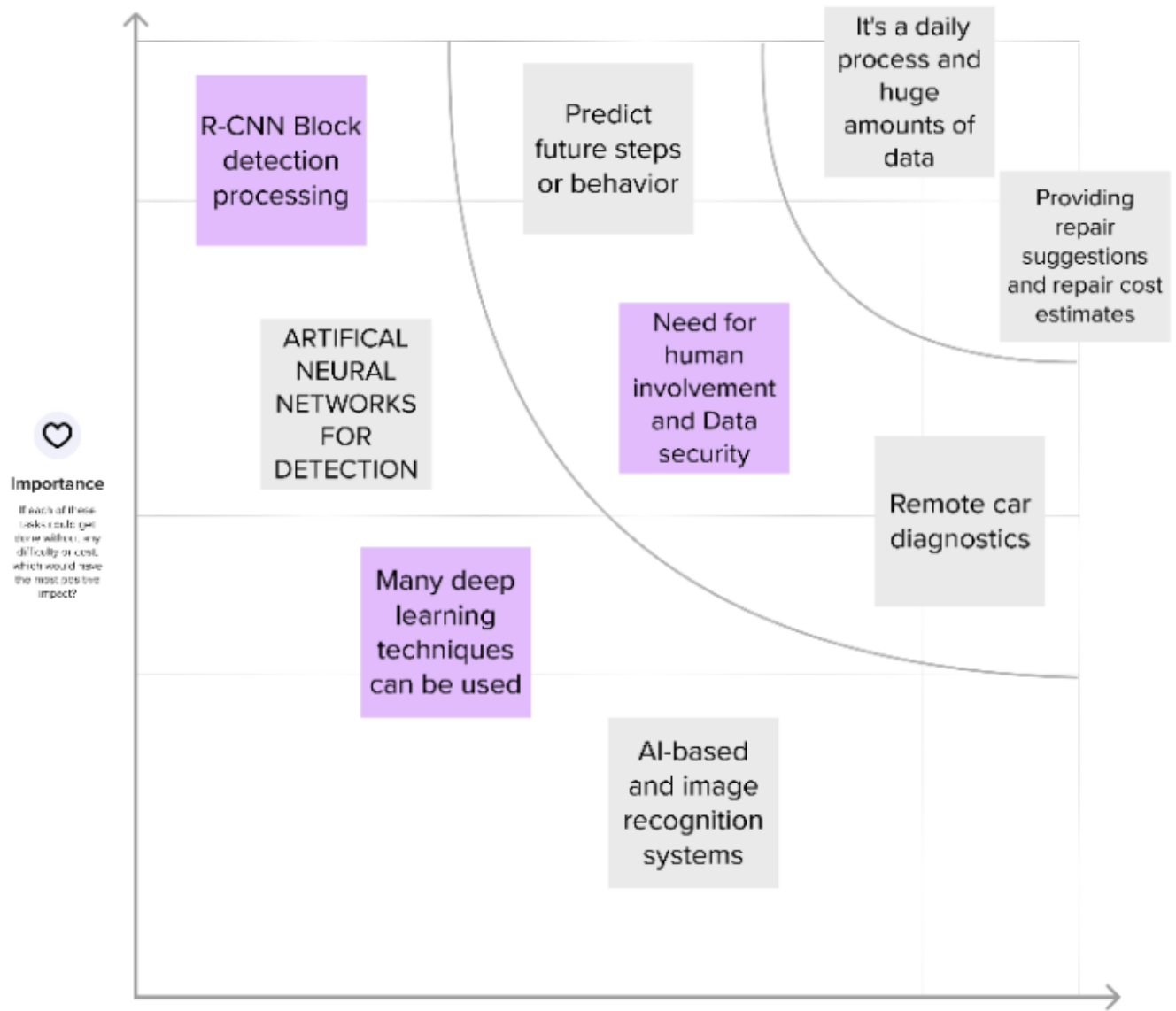
This step of ideation includes the listing of individual ideas by teammates to help with the problem statement framed. All the individual ideas have been valued and made individual clusters.

Then discussed as a team and finally made an ideation Cluster A and concluded with the most voted ideas from all the clusters together and Cluster B with the least needed ideas.



Step 3: Idea Prioritization

This step includes the process of listing necessary components to come up with the working solution and making a hierarchy chart by prioritizing the components based on importance, say from the higher being backend and lower being the user interfacing components.



3.3 PROPOSED SOLUTION

Problem Statement (Problem to be solved)

Nowadays a lot of money is being wasted in the car insurance business due to leakage claims. Claims leakage Underwriting leakage is characterized as the discrepancy between the actual payment of claims made and the sum that should have been paid if all of the industry's leading practices were applied. Visual examination and testing have been used to may these results. However, they impose delays in the processing of claims.

Idea / Solution description

Our solution is to build a VGG16 model that can detect the area of damage on a car. The rationale for such a model is that it can be used by insurance companies for faster processing of claims if users can upload pics and the model can assess damage (be it dent scratch from and estimates the cost of damage. This model can also be used by lenders if they are underwriting a car loan, especially for a used car.

Car Detection

The approach narrows down to two separate models pipelined. The first task is to differentiate between a whole and a damaged car followed by detecting the extent of damage and classify accordingly. Each class has at least 300 images to train upon.

Feature Extraction

An extensively comparison of the performances of many deep feature approaches was done in terms of feature extraction and decided to use the VGG16 model with ImageNet weights due to its simplistic model architecture and computational efficiency

Transfer Learning

The VGG16 architecture was selected because it has a relatively simple architecture and Keras ships with a model that has been pre-trained on ImageNet. It is just a number of Conv2D and MaxPooling2D layers with a dense network on top with a final softmax activation function. Additional dense trainable layers with sigmoid function above this model have been added.

Classification

After successfully extracting the features for the two classes, two binary classification model for the pair of two classes were built.

Preprocessing

The RGB (Red-Green-Blue) images are Gray-scaled. The images are are resized throughout the dataset using a predefined image size in order to change them into a desirable format. The image data and corresponding class index are appended to training data. The training data is randomly shuffled to ensure that each data point creates an independent change on the model, without being biased by the same points before them. Pickle file is generated to save the serialized format of training data to a file and load it later to directly train the different models without repeating the hassle of data preprocessing.

3.4 PROPOSED SOLUTION FIT

The Problem-Solution Fit simply means that you have found a problem with your customer and that the solution you have realized for it solves the customer's problem. It helps entrepreneurs, marketers and corporate innovators identify behavioral patterns and recognize what would work.

Define CS, fit into CL	1. CUSTOMER SEGMENT(S) CS Who is your customer? i.e. The people who having the vehicle (who's vehicle got damaged by any accidents).	6. CUSTOMER LIMITATIONS <small>EG. BUDGET, DEVICES</small> CL What constraints prevent your customers from taking action? i.e. expenditures, budget	5. AVAILABLE SOLUTIONS <small>PROS & CONS</small> AS Damages are analysed by the worker and reported and submitted to provide insurance.	Explore AS, differentiate
	2. PROBLEMS / PAINS <small>+ ITS FREQUENCY</small> PR Plants are damaged due to accidents It may leads to many losses based on the damages.	9. PROBLEM ROOT / CAUSE RC Accidents are majorly due to careless driving, drunk and drive, driving without knowledge, etc.	7. BEHAVIOR <small>+ ITS INTENSITY</small> BE If it notices any damages or improper working and estimate the cost for the damages, then it will report that to the company	
Focus on PR, tap into BE, understand RC	3. TRIGGERS TO ACT TR Being aware of fake reports	10. YOUR SOLUTION SL Artificial intelligence is used to sense the damage occurred due to accident and it will estimate the coat for the damages, then it will give a report which is handled to the insurance company to provide insurance.	8. CHANNELS of BEHAVIOR CH <small>ONLINE</small> Studying about the various damaged in the vehicle.	Extract online & offline CH of BE
	4. EMOTIONS <small>BEFORE / AFTER</small> EM Before – frustrated, loss After – Happy		<small>OFFLINE</small> Reporting the damages in the vehicle and estimate the amount for the damage.	
Identify strong TR & EM				

CHAPTER - 4

REQUIREMENT ANALYSIS

4.1 FUNCTIONAL REQUIREMENT

FR No.	Functional Requirement (Epic)	Sub Requirement (Story / Sub-Task)
FR-1	User Login	Login through Form Login through Gmail
FR-2	User Interface	User friendly and simple website.
FR-3	Collection of datasets	Information about the user and their vehicle. Information about Insurance plans.
FR-4	Results	Model should be trained with high accuracy. Results obtained from the model should be displayed to the user with easy interpretability.

4.2 NON-FUNCTIONAL REQUIREMENTS

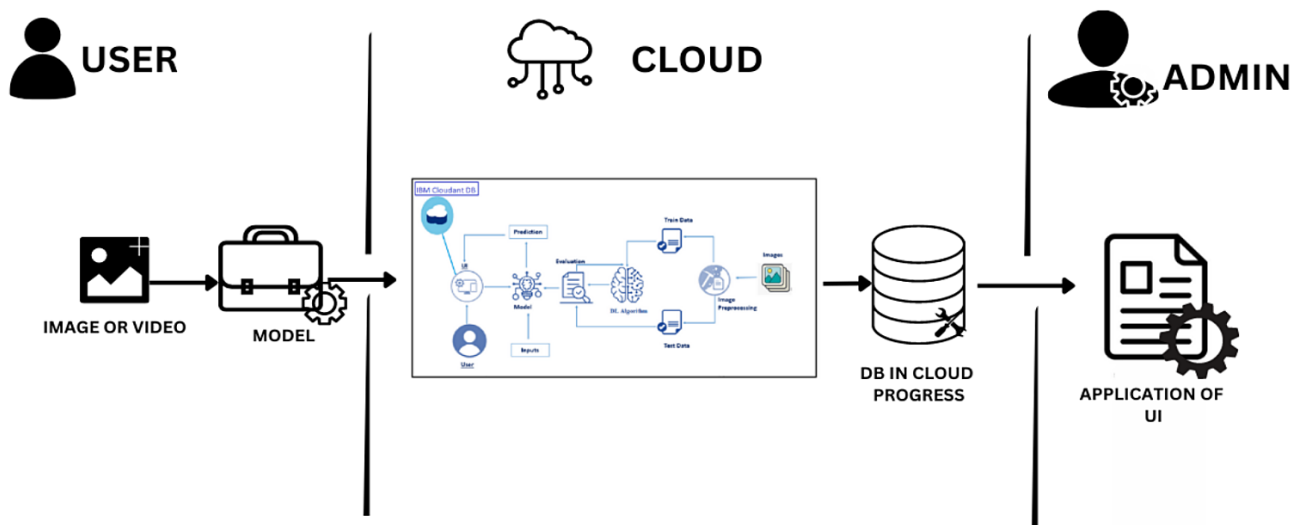
FR No.	Non-Functional Requirement	Description
NFR-1	Usability	Intelligent model to assess the damage in the vehicle and estimate the cost to be provided by the insurance company.
NFR-2	Security	The authenticity of the user and the confidentiality of the user details about their vehicle should be maintained.
NFR-3	Reliability	This project should be able to achieve good accuracy in damaging assessment as well in cost estimation so that the user is provided with the accurate and unbiased insurance amount.
NFR-4	Performance	The real time images should be captured and uploaded into the website where the proposed model will carry out the damage assessment and give the cost of insurance accordingly.
NFR-5	Availability	The webpage should be compatible for the web browsers in both mobile phones and computers.
NFR-6	Scalability	The proposed solution will be scalable in future because of the efficient and quicker analysis and cost prediction.

CHAPTER - 5

PROJECT DESIGN

5.1 DATA FLOW DIAGRAMS

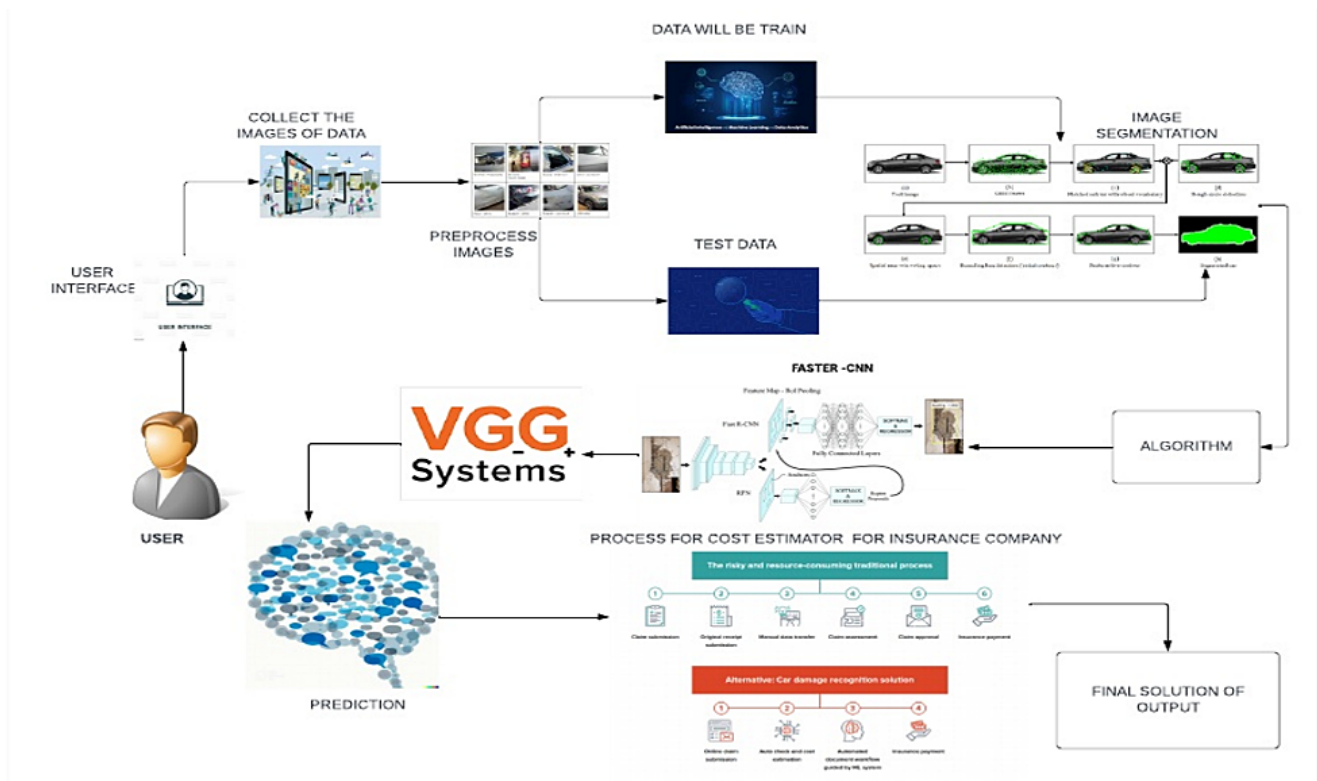
A Data Flow Diagram is a traditional visual representation of the information flows within a system. A neat and clear Data flow diagram can depict the right amount of the system requirement graphically. It shows how data enters and leaves the system, what changes the information, and where data is stored.



5.2 Solution & Technical Architecture

The solution architecture includes the components and the flow we have designed deliver the solution.

Here, the application is planned to be designed, where the caretaker of the patients can feed the medicinal details to the database connected with the help of python and API calls. By monitoring that information in the program, timely message alerts are given to the patients to intake the medicine.



5.3 USER STORIES

User Type	Functional Requirement (Epic)	User Story Number	User Story / Task	Acceptance criteria	Priority
Customer (Mobile user)	Registration.	USN-1	As a user, I can register for the application by entering my email, and password, and confirming my password.	I can access my account/dashboard by entering valid credentials	High
Customer details	Login	USN-2	As a user, I will receive a confirmation email once I have registered for the application.	I can receive a confirmation email & click confirm	High
Customer Uses	Dashboard	USN-3	As a user, I can register for the application through Facebook	I can register & access the dashboard with Facebook Login	Low

Customer usage	Details about insurance companies	USN-4	As a user, I can register for the application through Gmail	I can register & access the dashboard with Facebook Gmail	Medium
Customer Options	Login and repeated usage	USN-5	As a user, I can log into the application by entering email & password	I can log in and view my dashboard at my demand on any time	High
Customer needs to do	Web page	USN-6	As a user can capture images of vehicle and upload web portal.	I can capture the entire vehicle and upload	High
Customer (Web user)	Details about estimated cost based on damage	USN-7	As a user I must receive a detailed report of the damages present in the vehicle and the cost estimated	I can get the estimated insurance cost	High

Customer Care Executive	Provide friendly and efficient customer support and sort out the queries	USN-8	As a user, I need to get support from developers in case of queries and failure of service provided	I can have smooth user experiences and all the issues raised is sorted	Medium
Administrator	Overview the entire process and act as a bridge between user and developers	USN-9	We need to satisfy the customer needs in an efficient way and make sure any sort of errors are fixed	I can finish the work without any problems	High

CHAPTER - 6

PROJECT PLANNING & SCHEDULING

6.1 Sprint Planning & Estimation

Sprint	Functional Requirement (Epic)	User Story Number	User Story / Task	Priority
Sprint-1	Registration	USN-1	As a user, they should register for the application by entering their email & password.	Medium
Sprint-1		USN-2	User will receive a confirmation E-mail, once they have registered for the application.	Medium
Sprint-1	Login	USN-3	As a user, they initially login using the password through login link sent with confirmation email.	High
Sprint-2	Details about insurance	USN-4	As a user, they can access the details about insurance	Low

	company		company.	
Sprint-2	Dashboard	USN-5	As a user, they must enter details of their vehicle web portal.	Medium
Sprint-2		USN-6	As a user, they must capture images of damaged vehicle and upload it into the web portal.	High
Sprint-3	Reports about the damage and estimated cost for damage	USN-7	As a user, they receive a detailed report of the damages present in the vehicle and the cost-estimated	High
Sprint-3		USN-8	As a user, they receive an email about the detailed report of the damages and estimated cost for their vehicle.	Medium

Sprint-3	Rating of customers	USN-9	As a developer, need to know their service to the customer needs by the customer ratings	Low
Sprint-3	Logout	USN-10	After the Process user can logout from the Webpage	Medium
Sprint-4	Deployment	USN-11	Connecting the frontend and backend. Deployment of application using IBM cloud	High
Sprint-4	Testing	USN-12	Checking the functionality of application. Checking for user acceptance and integration	High

6.2 Sprint Delivery Schedule

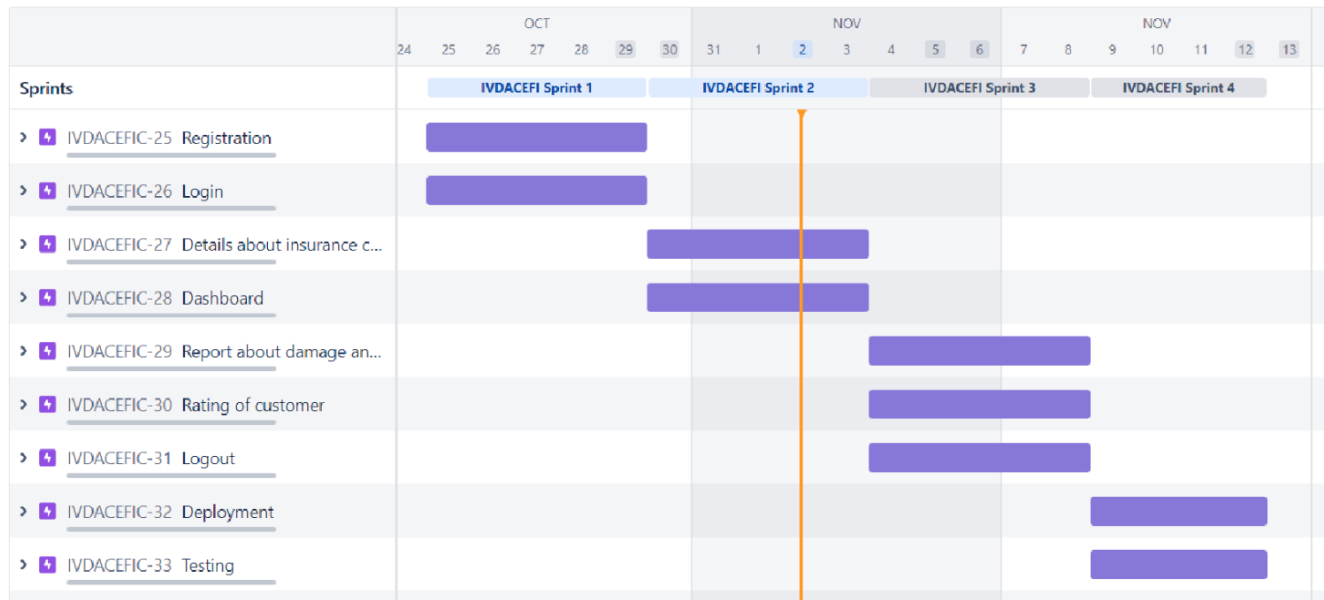
Sprint	Duration	Sprint Start Date	Sprint End Date (Planned)	Story Points Completed (as on planned end date)
Sprint 1	5 days	25 Oct 2022	29 Oct 2022	29 Oct 2022
Sprint 2	5 days	30 Oct 2022	03 Nov 2022	03 Nov 2022
Sprint 3	5 days	04 Nov 2022	08 Nov 2022	08 Nov 2022
Sprint 4	4 days	09 Nov 2022	12 Nov 2022	12 Nov 2022

Velocity

Average velocity = $12/4 = 3$

6.3 Reports from JIRA

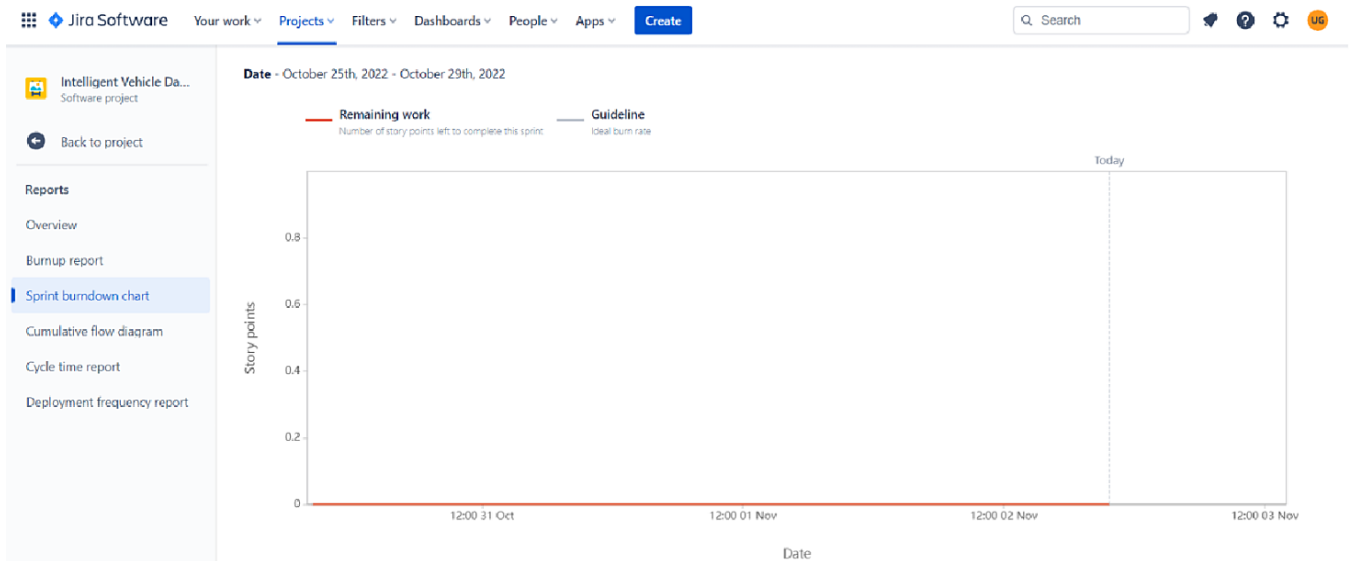
Burndown Chart



CHAPTER - 7

CODING & SOLUTIONING

7.1 Feature 1



7.2 Feature 2

```
<!DOCTYPE html>
<html lang="en">
<head>
  <title> Vehicle Damage Assessment</title>
  <link rel="stylesheet" type="text/css"
href="{ {url_for('static',filename='css/prediction.css')}}">
</head>
<body>
  <div class="head">
    <br><h1 class="name">Vehicle Damage Detection</h1>
    <nav>
```

```

        <ul>
            <a href="http://127.0.0.1:5000/index" >Home</a>
            <a href="http://127.0.0.1:5000/logout" >Logout</a>
        </ul>
    </nav>
</div>
<br><br><br><br><br>
<div class="image">
    <form action="">
        <label for="mmm">Upload here</label><br><span><input type="file"
name="predictionimage" id="">
        <input type="submit" value="Submit"></span>
    </form>
</div>
<br><br><br><br><br><br><br><br>
<div class="image">
    <esti>
        <h6>The Estimated cost for the damage is: </h6>{{prediction}}
    </esti>
</div>
<br><br><br><br><br><br><br><br><br><br><br><br>
<div >
    <h5 class="rights" ><br>Copyrights<sup>©</sup> 2021,All Rights
Reserved<br><br></h5>
</div>
</body>

```

CHAPTER - 8

TESTING

8.1 Test Cases

A test case has components that describe input, action and an expected response, in order to determine if a feature of an application is working correctly. A test case is a set of instructions on “HOW” to validate a particular test objective/target, which when followed will tell us if the expected behavior of the system is satisfied or not. Characteristics of a good test case:

- Accurate: Exacts the purpose.
- Economical: No unnecessary steps or words.
- Traceable: Capable of being traced to requirements.
- Repeatable: Can be used to perform the test over and over.
- Reusable: Can be reused if necessary.

S.NO	Scenario	Input	Excepted output	Actual output
1	User login	User name and password	Login	Login success.
2	Upload Image	Upload damaged vehicle image as a input	Detecting object and analyze for claim insurance	Details are stored in a database.

8.2 User Acceptance Testing

This sort of testing is carried out by users, clients, or other authorised bodies to identify the requirements and operational procedures of an application or piece of software. The most crucial stage of testing is acceptance testing since it determines whether or not the customer will accept the application or programme. It could entail the application's U.I., performance, usability, and usefulness. It is also referred to as end-user testing, operational acceptance testing, and user acceptance testing (UAT).

CHAPTER - 9

RESULTS

9.1 Performance Metrics

Vehicle damage detection is used to reduce claims leakage during insurance processing.

Visual inception and validation are usually done. As it takes a long time, because a person needs to come and inspect the damage.

Here we are trying to automate the procedure. Using this automation, we can avoid time conception for the insurance claim process.

Intelligent Vehicle Damage Assessment & Cost Estimator for Insurance Companies

[Home](#) [Login](#) [Register](#) [Prediction](#)

About Our Project

Vehicle damage detection is used to reduce claims leakage during insurance processing.

Visual inception and validation are usually done. As it takes a long time, because a person needs to come and inspect the damage.
Here we are trying to automate the procedure. Using this automation, we can avoid time conception for the insurance claim process.

Copyrights © 2021, All Rights Reserved

Register

Already have account? [Login](#)

Login

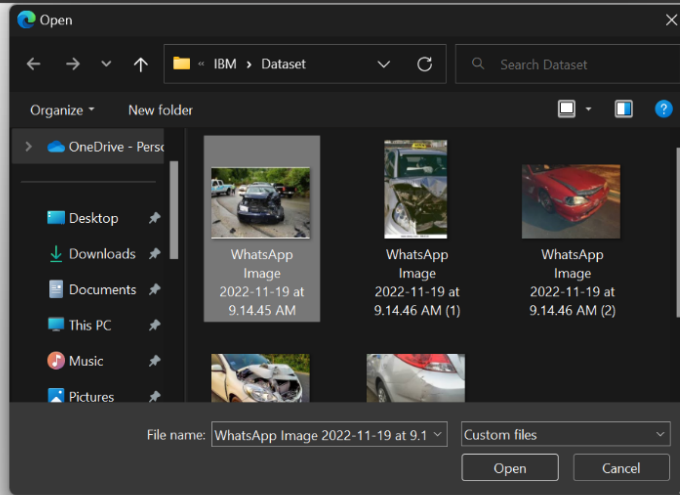
Don't have account? [Register](#)

Vehicle Damage Detection

Home Logout

Upload here
 No file chosen

The Estimated cost for the damage is:



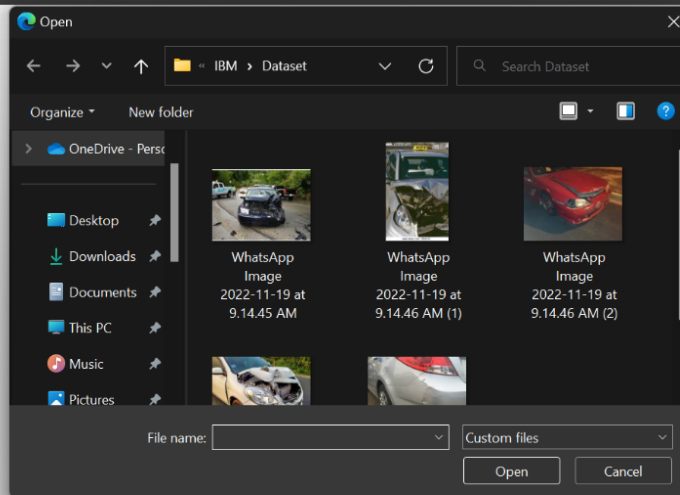
Copyrights © 2021, All Rights Reserved

Vehicle Damage Detection

Home Logout

Upload here
 No file chosen

The Estimated cost for the damage is:
16000 - 30000 INR



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CHAPTER - 10

ADVANTAGES & DISADVANTAGES

Advantages

- Intelligent damage determination system can be used to determine the appearance damage of vehicles in small cases.
- Photographs of target vehicles and multiple trio vehicles were taken and uploaded, intelligent recognition, information input, intelligent recognition and event finalization are completed in accident investigation.
- Damage results including maintenance scheme recommendation and maintenance price recommendation are automatically given according to damage recognition results.

Disadvantages

- **Coverage failures:** The primary and major disadvantage of car insurance is that your policy does not cover the entire vehicle. Only the specific parts of the car are under damage coverage, the policyholder needs to verify hidden clauses in the document keenly before buying the policy.
- **Time taking Process:** Most insurance companies take a time frame to settle the claim amount, this is the problem most the policy holders are facing.

CHAPTER -11

CONCLUSION

In this project, based on the demand of automobile insurance claims and intelligent transportation, combined with abundant basic data and advanced machine vision algorithm, an intelligent damage determination system of 'Artificial Intelligence + Vehicle Insurance' is constructed. The rapid accumulation of data, the continuous improvement of computing power, the continuous optimization of algorithm models, and the rapid rise of multi-scene applications have made profound changes in the development environment of artificial intelligence. Thus, created a login page to enter the damage vehicle and the model show the result of how much insurance cost want to pay. This help the user to check the amount accurately. This model useful in insurance providing companies

CHAPTER – 12

FUTURE SCOPE

In future, we will continue to explore the innovation of insurance technology of 'AI + Vehicle Insurance'. We hope that we can use the power of intelligent damage determination system. On the one hand, the owner can take photos by one click to achieve rapid loss determination, price estimation and immediate compensation. On the other hand, it assists insurance companies to achieve rapid and accurate pricing in the process of fixing losses and claims. Finally, by combining the rapid compensation of accident vehicles to relieve traffic pressure, to avoid more serious personal and property losses caused by secondary accidents.

CHAPTER – 13

APPENDIX

13.1 Source Code

HTML CODE

Index

```
<!DOCTYPE html>
<html lang="en">
<head>
  <title>Home</title>
  <link rel="stylesheet" type="text/css"
href="{{url_for('static',filename='css/index.css')}}">
</head>
<body>
  <div class="head">
    <br><h1 class="name">Intelligent Vehicle Damage Assessment & Cost Estimator
for Insurance Companies</h1>
    <nav>
      <ul>
        <a href="http://127.0.0.1:5000/index" >Home</a>
        <a href="http://127.0.0.1:5000/login" >Login</a>
        <a href="http://127.0.0.1:5000/register" >Register</a>
        <a href="http://127.0.0.1:5000/prediction" >Prediction</a>
      </ul>
    </nav>
  </div>
  <div class="para">
    <h2>About Our Project</h2>
```

<p>Vehicle damage detection is used to reduce claims leakage during insurance processing.

Visual inception and validation are usually done. As it takes a long time, because a person needs to come and inspect the damage.

Here we are trying to automate the procedure. Using this automation, we can avoid time conception for the insurance claim process.</p>

</div>

<div>

<h5 class="rights" >Copyrights[©] 2021,All Rights Reserved
</h5>

</div>

</body>

</html>

Login

<!DOCTYPE html>

<html lang="en">

<head>

<title>Login</title>

<link rel="stylesheet" type="text/css" href="{ {url_for('static',filename='css/login.css')}}">

</head>

<body>

<div class="head">

<h1 class="name">Vehicle Damage Detection</h1>

<nav>


```

        <a href="http://127.0.0.1:5000/index" >Home</a>
        <a href="http://127.0.0.1:5000/login" >Login</a>
        <a href="http://127.0.0.1:5000/register" >Register</a>
    </ul>
</nav>
</div>
<div class="details">
    <h3>Login</h3>
    <form action="">
        <div class="input">
            <br>
            <span><input type="email" name="email" id="email" placeholder="Enter
Email-id"></span>
        </div>
        <div class="input">
            <br>
            <span><input type="password" name="pwd" id="pwd" placeholder="Enter
Password"></span><br>
        </div>
        <br>
        <div class="btn">
            <span><button type="submit">Login</button></span>
        </div>
        <h6>Don't have account? <a href="Register page.html" >Register</a></h6>
    </form>
</div>
<div>
    <h5 class="rights" >Copyrights<sup>©</sup> 2021,All Rights
Reserved<br></h5>

```



```
</div>
</body>
</html>
```

Logout

```
<!DOCTYPE html>
<html lang="en">
<head>
  <title>Logout</title>
  <link rel="stylesheet" type="text/css"
href="{{url_for('static',filename='css/logout.css')}}">
</head>
<body>
  <div class="head">
    <br><h1 class="name">Vehicle Damage Detection</h1>
    <nav>
      <ul>
        <a href="http://127.0.0.1:5000/index" >Home</a>
        <a href="http://127.0.0.1:5000/login" >Login</a>
      </ul>
    </nav>
  </div>
  <div class="para">
    <h2>Successfully Logged Out</h2>
    <p>Login for more Information...</p>
    <br><br>
    <div class="image">
      <form action="">
```

```

        <label for="mmm">Your Rating : </label><span><input type="number"
name="rating" id="">
        <input type="submit" value="Submit"></span>
    </form>
</div>
</div>
<div >
    <h5 class="rights" >Copyrights<sup>©</sup> 2021,All Rights
Reserved<br></h5>
</div>
</body>
</html>

```

Prediction

```

<!DOCTYPE html>
<html lang="en">
<head>
    <title> Vehicle Damage Assessment</title>
    <link rel="stylesheet" type="text/css"
href="{ {url_for('static',filename='css/prediction.css')}}">
</head>
<body>
    <div class="head">
        <br><h1 class="name">Vehicle Damage Detection</h1>
        <nav>
            <ul>
                <a href="http://127.0.0.1:5000/index" >Home</a>
                <a href="http://127.0.0.1:5000/logout" >Logout</a>
            </ul>
        </div>
    </div>

```

```

        </ul>
    </nav>
</div>
<br><br><br><br><br>
<div class="image">
    <form action="">
        <label for="mmm">Upload here</label><br><span><input type="file"
name="predictionimage" id="">
        <input type="submit" value="Submit"></span>
    </form>
</div>
<br><br><br><br><br><br><br><br>
<div class="image">
    <esti>
        <h6>The Estimated cost for the damage is: {{prediction}}</h6>
    </esti>
</div>
<br><br><br><br><br><br><br><br><br><br><br><br>
<div >
    <h5 class="rights" ><br>Copyrights<sup>©</sup> 2021,All Rights
Reserved<br><br></h5>
</div>
</body>
</html>

```

Register

```
<!DOCTYPE html>
<html lang="en">
<head>
  <title>Register</title>
  <link rel="stylesheet" type="text/css"
href="{{url_for('static',filename='css/register.css')}}">
</head>
<body>
  <div class="head">
    <br><h1 class="name">Vehicle Damage Detection</h1>
    <nav>
      <ul>
        <a href="http://127.0.0.1:5000/index" >Home</a>
        <a href="http://127.0.0.1:5000/login" >Login</a>
        <a href="http://127.0.0.1:5000/register" >Register</a>
      </ul>
    </nav>
  </div>
  <div class="details">
    <h3>Register</h3>
    <form action="/Register" method="POST" autocomplete="off">
      <div class="input">
        <br>
        <input type="text" id="name" placeholder="Enter Name" required>
      </div>
      <div class="input">
        <br>
```

```

        <input type="email" name="email" id="email" placeholder="Enter Email-id"
required>
    </div>
    <div class="input">
        <br>
        <input type="password" name="pwd" id="pwd" placeholder="Enter Password"
required><br>
    </div>
    <br>
    <div class="btn">
        <button type="submit">Register</button>
    </div>
    <h6>Already have account? <a href="Login page.html" >Login</a></h6>
</form>
</div>
<div>
    <h5 class="rights" >Copyrights<sup>©</sup> 2021,All Rights Reserved</h5>
</div>
</body>
</html>

```

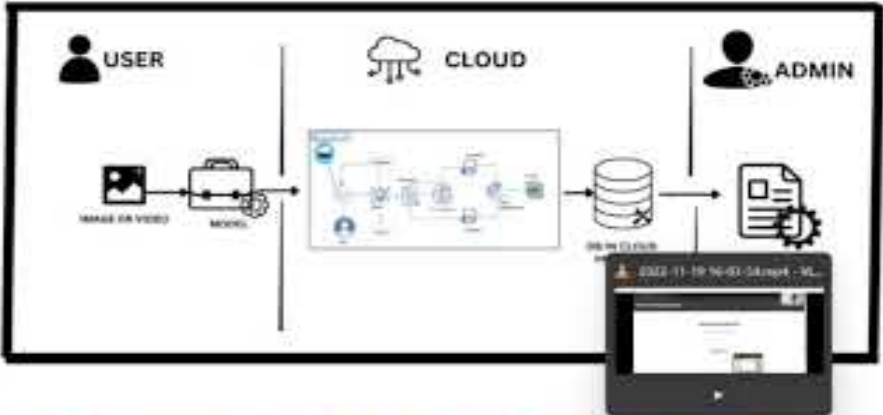
13.2 GitHub & Project Demo Links

GitHub

<https://github.com/IBM-EPBL/IBM-Project-45915-1660733189>

Project Demo Links

Technical Architecture:



The diagram illustrates the technical architecture of a system. It is divided into three main sections: USER, CLOUD, and ADMIN. The USER section shows an input of 'IMAGE OR VIDEO' being processed by a 'MODEL'. The output of the model is sent to the CLOUD section, which contains a complex network of services and a database. The ADMIN section shows a user interface with a document icon and a gear icon, connected to the CLOUD database. A small inset image shows a laptop displaying a web application interface.

2022-11-19 14:01 Screenshot - VL...