INTELLIGENT VEHICLE DAMAGE ASSESSMENT AND COST ESTIMATOR FOR INSURANCE COMPANIES

TEAM ID: PNT2022TMID47699

ABSTRACT:

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.

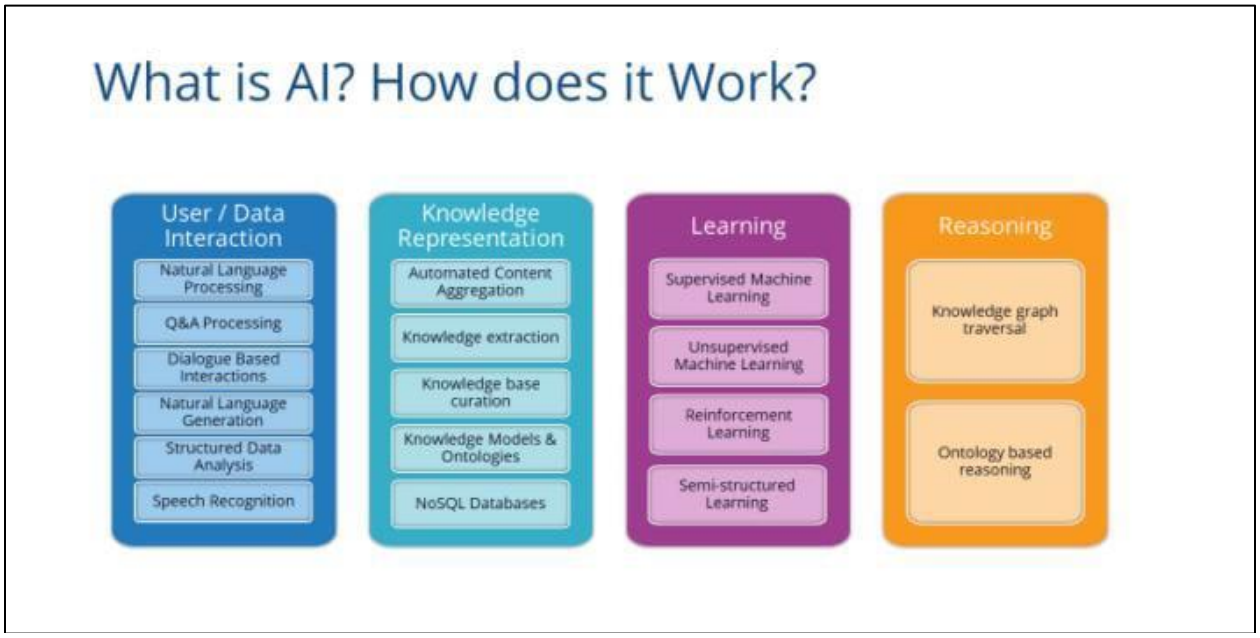
The aim of this project is to build a VGG16 model that can detect the area of damage on a car. The rationale for such a model is that it can be used by insurance companies for faster processing of claims if users can upload pics and the model can assess damage(be it dent scratch from and estimates the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

TABLE OF THE CONTENT

1. INTRODUCTION

In the simplest terms, AI which stands for artificial intelligence refers to systems or machines that mimic human intelligence to perform tasks and can iteratively improve themselves based on the information they collect. AI manifests in a number of forms.

HOW DOES IT WORK



1.1 PROJECT OVERVIEW

Intelligent damage determination system can be used to determine the appearance damage of vehicles in small cases. In Car Insurance industry, a lot of money is being wasted on Claims leakage. Claims leakage is the gap between the optimal and actual settlement of a claim. Visual inspection and validation are being used to reduce claims leakage. But doing inspection might take a long time and result in delaying of claims processing. An automated system for doing inspection and validation will be of great help in speeding up the process.

1.2 PURPOSE

The rapidly expanding automobile industry highly backs the equally fast-growing auto insurance market. Although until now this industry has been solely based on traditional ways to make repair claims. In case of an unfortunate accident, the claims for the car damage needs to be filed manually. An inspector is required to physically analyze the vehicles to assess the damage and obtain a cost estimate. In such situation, there is also the possibility of inaccurate settlements due to human errors. Automating such a process with the help of machine learning and remote usage would make the process a lot more convenient for both sides of the damage, increasing productivity of the insurance carrier and satisfaction of the customer.

2. LITERATURE SURVEY

Auto Insurance Claim Using CNN Model

Li Ying & Dorai Chita, presented the CNN Model for the auto insurance claims process, improvements in the First Notice of Loss and rapidity in the investigation and evaluation of claims could drive significant values by reducing loss adjustment expense. This paper proposed a novel application where advanced

technologies in image analysis and pattern recognition are applied to automatically identify and characterize automobile damage. Success in this will allow some cases to proceed without human adjusters, while others to proceed more efficiently, thus ultimately shortening the time between the first Notice of Loss and the final pay-out.To investigate its feasibility. they built a prototype system which automatically identifies the damaged area(s) based on the comparison of ages. Performance of the before- and after-accident automobile in of the prototype system has been evaluated on images taken from forty scaled model cars under reasonably controlled environments, and encouraging results were obtained. It is a belief that, with the advancement of image analysis and pattern recognition technologies, their proposed idea could evolve into a very promising application area where the auto insurance industry could significantly benefit. The main drawback in this model was that the automobile damaged can be analyzed only having white background otherwise it will be not able to give the desired results and the study also indicates that there may be an error in the result, it may not give that accurate result like 85-90% affective.

Image Based Vehicle insurance

U. Waqas, N. Akram, S. Kim, D. Lee and J. Jeon, they presented the Image-based vehicle insurance processing and loan management has large scope for automation in automotive industry. In this paper consideration of the problem of car damage classification, where categories include medium damage, huge damage and no damage. Based on deep learning techniques, Mobile Net model is proposed with transfer learning for classification. Moreover, moving towards automation also comes with diverse hurdles; users can upload fake images like screenshots or taking pictures from computer screens, etc. To tackle this problem a hybrid approach is proposed to provide only authentic images to algorithm for damage classification as input. In this regard, moiré effect detection and metadata analysis are performed to detect fraudulent images. For damage classification 95% and for moiré effect detection 99% accuracy is achieved. The main drawback was that Images in bad lighting, awkward angles, variety in vehicle models, images taken in rain or snow, minor scratches on vehicles, etc. Even though it used several angles and vehicle models in a small dataset to achieve automation but still the range is broad.

Damage Analysis of AI based Machine Learning

Phyu Mar Kyu and Kuntpong Woraratpanya they presented the sense of Artificial Intelligence (AI) based on machine learning and deep learning algorithms which can help to solve the problem for insurance industries for damage analysis. In this paper, they applied deep learning-based algorithms, VGG16 and VGG19, for car damage detection and assessment in real world datasets. The algorithms detect the damaged part of a car and assess its location and then its severity. Initially, it discovers the effect of domain-specific pre-trained CNN models, which are trained on an ImageNet dataset, and followed by fine-tuning, because some of the categories can be fine granular to get a specific task. Then it applies transfer learning in pre-trained VGG models and use some techniques to improve the accuracy of the system. To achieve the accuracy of 95.22% of VGG19 and 94.56% of VGG16 in the damaged detection, the accuracy of 76.48% of VGG19 and 74.39% of VGG16 in damage localization, the accuracy of 58.48% of VGG19 and 54.8% of VGG16 in damage severity with the combination of transfer learning and L2 regularization. From their results, the performance of VGG19 is better than VGG16. After analysing and implementing the models, it finds out that the results of using transfer learning and L2 regularization can work better than those of fine-tuning. The drawback of this model was since car damaged assessment is a specific domain, it is lack of publicly available datasets for car damaged images with labelling. Training a model with a small dataset is the most challenging.

Damage Detection at Deep learning based Architecture

Najmeddine Dhieb, Hakim Ghazzai, Hichem Besbes, and Yehia Massoud they presented automated and efficient deep learning-based architectures for vehicle: damage detection and localization. The proposed solution combines deep learning, instance segmentation, and transfer learning techniques for features extraction and damage identification. Its objective is to automatically detect damages in

vehicles, locate them, classify their severity levels, and visualize them by contouring their exact locations. Numerical results reveal that our transfer learning proposed solution, based on Inception-Resnet V2 pretrained model followed by a fully connected neural network, achieves higher performances in features extraction and damage detection/localization than another pre trained model, i.c.. VGG16. The transfer learning could significantly reduce the training times when it uses the weights of pre trained VGG models. Furthermore, it had demonstrated significant progress on how to solve classification problems when the small dataset was not enough to train a CNN model. The classes of the pre-trained VGG models are the source tasks, and the detected damaged parts of their locations, and their damaged levels are the target tasks in our system. The main drawback of this model was A reduction of model training time is also the most challenge. Typically, a traditional CNN model can be very time- consuming to perform image classification tasks and identify the correct weights for the network by multiple forward and backward iterations. This process may take days or even weeks to complete it using GPUs.

Mask R-CNN Mask

RCNN is a deep neural network aimed to solve instance segmentation problem in machine learning or computer vision. In other words, it can separate different objects in an image or a video. You give it an image, it gives you the object bounding boxes, classes and masks.There are two stages of Mask RCNN. First, it generates proposals about the regions where there might be an object based on the input image. Second, it predicts the class of the object, refines the bounding box and generates a mask in pixel level of the object based on the first stage proposal. Both stages are connected to the backbone structure.

Car Damage Assessment using CNN

The project involved developing and training a CNN model with 10 convolutional layers and 3 pooling layers with Relu as the

activation function at each layer and the final layer being a Fully Connected Layer. The dataset used in training the model was obtained through web scraping. The model performed well on high quality images hut gave inaccurate results on blurred images. The main disadvantage was the back of widely available labelled dataset.

Automatic Car Damage Assessment through videos

Wei Zhang, Yuan Cheng, Xin Guo, Qingpei Guo, Jian Wang, Qing Wang, Chen Jiang, Meng Wang, Furong Xu, Wei Chu proposed a method to detect and analyze car damage through user input videos. The approach involved 2 modules Damage recognition and localisation and component recognition and localisation to segment the damage and components at pixel level to get accurate results. The model required high quality videos as input to generate accurate results.

Recognition of Car Manufacturers using Faster R-CNN and Perspective Transformation

Israfil Ansari, Yeunghak Lee, Yunju Jeong, Jaechang Shim proposed a method to detect car logos from CCTV footages. The approach involved performing perspective transformation on CCTV footages to get a clear view of the logos and then detecting and localizing the car logos through faster RCNN .

Vehicle Logo Detection and Classification using Discriminative Pixel-patches Sparse Coding

Yi Ouyang developed a system to detect and classify vehicle logos with the help of sparse coding. The method localised the car logos by detecting the number plate with the help of 3-channel pixel regression technique then performing multi class structural linear SVM for logo classification .

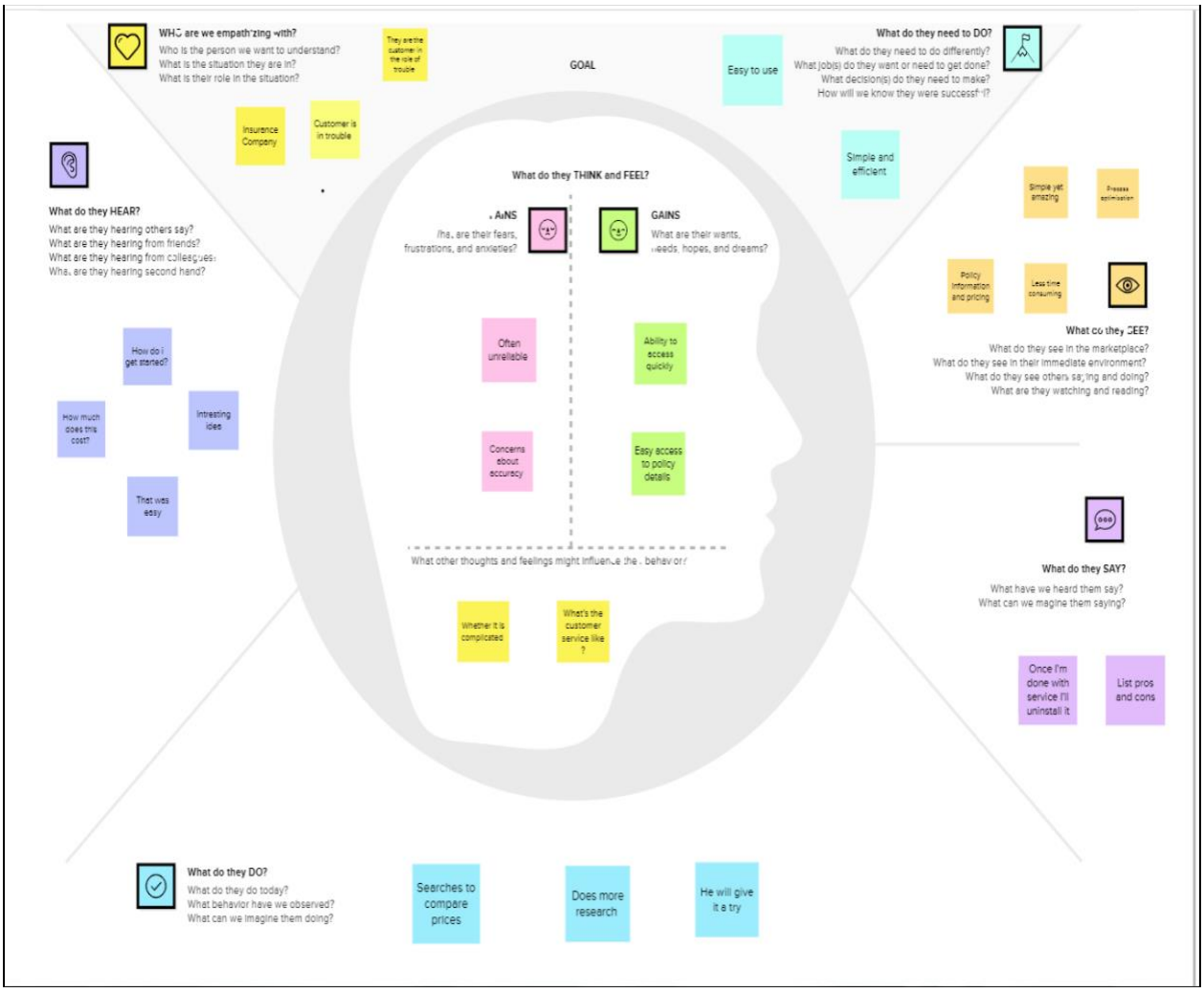
Vehicle Type classification With Deep Learning

The paper researches various algorithms to classify the car body type from images as SUV, sedan, pick-up truck. Dataset used was the stanford dataset with 224 images and achieved an accuracy of 76 percent when arithmetic mean computation was on a hierarchical tree on ResNet 34 architecture .

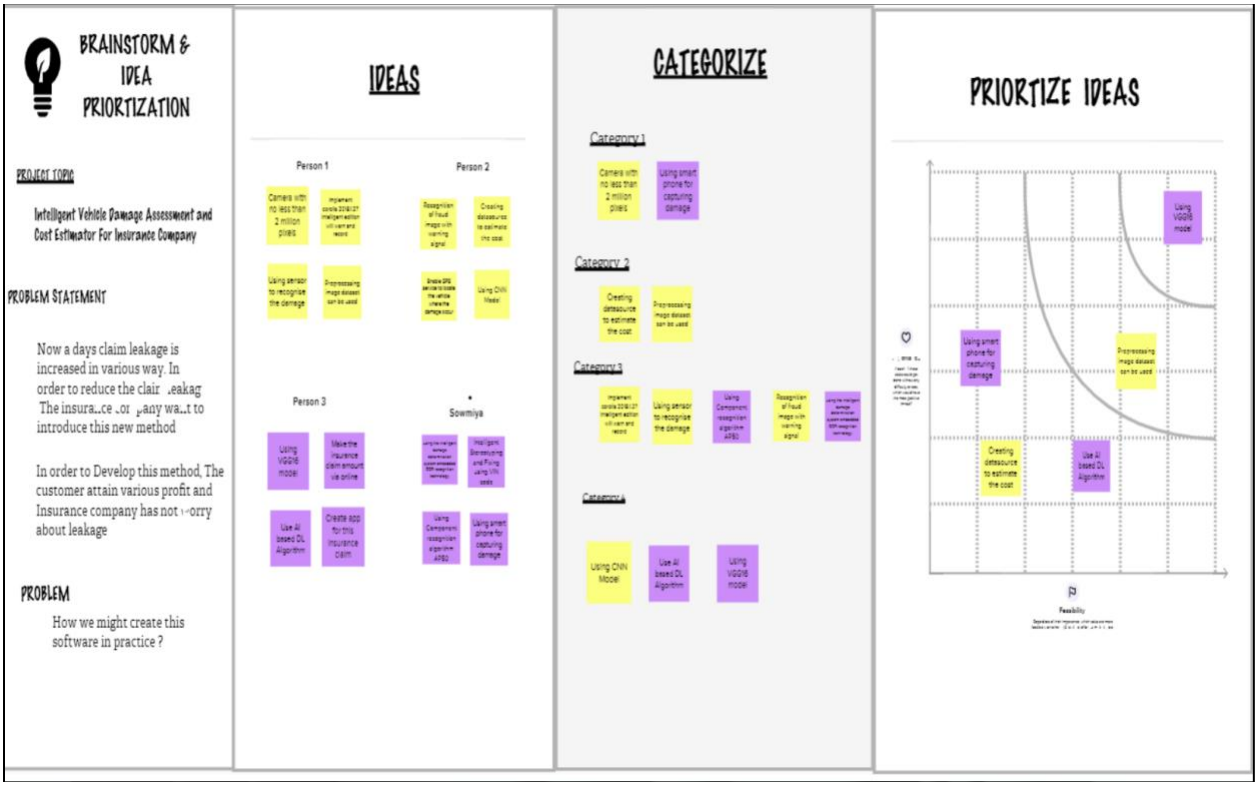
2.3 PROBLEM STATEMENT DEFINITION

3. IDEATION & PROPOSED SOLUTION

3.1 EMPATHY MAP CANVAS


WHO are we empathizing with?
Who is the person we want to understand?
What is the situation they are in?
What is their role in the situation?
They are the customer in the role of trouble
Insurance Company
Customer is in trouble
GOAL
Easy to use
What do they need to DO?
What do they need to do differently?
What job(s) do they want or need to get done?
What decision(s) do they need to make?
How will we know they were successful?
Simple and efficient
What do they HEAR?
What are they hearing others say?
What are they hearing from friends?
What are they hearing from colleagues?
What are they hearing second hand?
How do i get started?
How much does this cost?
Intresting idea
That was easy
What do they THINK and FEEL?
PAINS
What are their fears, frustrations, and anxieties?
GAINS
What are their wants, needs, hopes, and dreams?
Often unreliable
Concerns about accuracy
Ability to access quickly
Easy access to policy details
What other thoughts and feelings might influence their behavior?
Whether it is complicated
What's the customer service like ?
Simple yet amazing
Process estimation
Policy information and pricing
Less time consuming
What do they SEE?
What do they see in the marketplace?
What do they see in their immediate environment?
What do they see others saying and doing?
What are they watching and reading?
What do they SAY?
What have we heard them say?
What can we imagine them saying?
Once I'm done with service I'll uninstall it
List pros and cons
What do they DO?
What do they do today?
What behavior have we observed?
What can we imagine them doing?
Searches to compare prices
Does more research
He will give it a try

3.2 IDEATION & PROPOSED SOLUTION

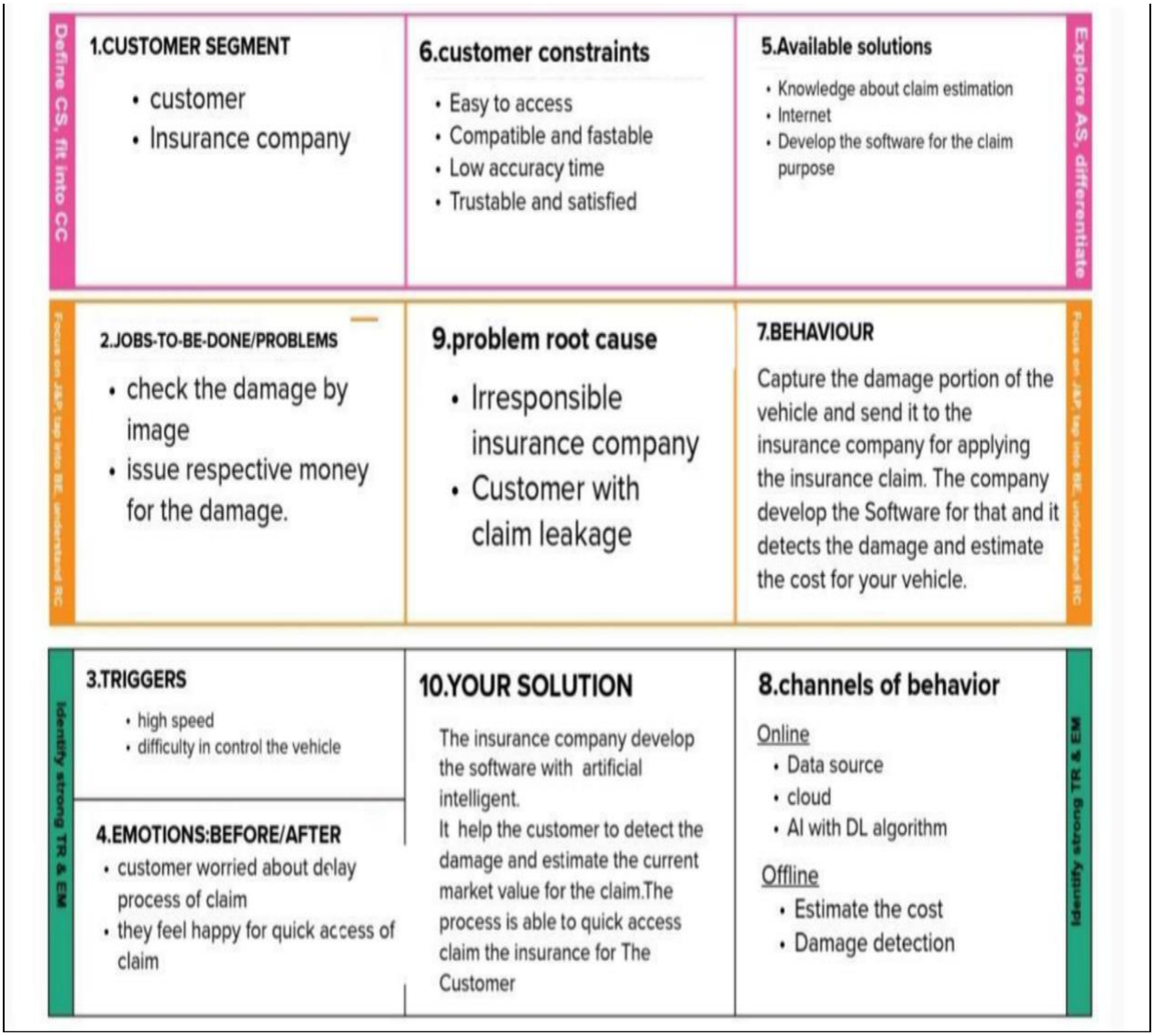


3.3 PROPOSED SOLUTION

S.NO	PARAMETER	DESCRIPTION
1.	Problem Statement (Problem to be solved)	Now a days , The Insurance Companies faced the greatest problem that is leakage of insurance claim. Some of the customer done the extra amount for their damage of vehicle through fake bill for the claim. So The Insurance Companies lost their most of the amount due to leakage of claim .
2.	Idea / Solution description	To solve this problem ,we have to develop the software that helps to the insurance companies . The procedures we design involves creative initiative that will inspire the company has to

		believe in that software and also the customer..
3.	Novelty / Uniqueness	In our project we find out one solution for problems we used Artificial Intelligent .
4.	Social Impact / Customer Satisfaction	In our projects , Take the photo of damaged portion of vehicle and send it to the company for apply the claim. The process is more quick to access the claim and estimate the cost .so we think it is one of the best satisfaction for customers
5.	Business Model (Revenue Model)	It is more effective than others. It reduces delay process of claim. This helps the customer to get the claim quickly. Reducing Time accuracy
6.	Scalability of the Solution	It is user friendly. It has more advantages.It is trustworthy

3.4 PROPOSED SOLUTION FIT


Define CS, fit into CC
1.CUSTOMER SEGMENT
• customer
• Insurance company
6.customer constraints
• Easy to access
• Compatible and fastable
• Low accuracy time
• Trustable and satisfied
5.Available solutions
• Knowledge about claim estimation
• Internet
• Develop the software for the claim purpose
Explore AS, differentiate
Focus on J&P, tap into BE, understand RC
2.JOBS-TO-BE-DONE/PROBLEMS
• check the damage by image
• issue respective money for the damage.
9.problem root cause
• Irresponsible insurance company
• Customer with claim leakage
7.BEHAVIOUR
Capture the damage portion of the vehicle and send it to the insurance company for applying the insurance claim. The company develop the Software for that and it detects the damage and estimate the cost for your vehicle.
Focus on J&P, tap into BE, understand RC
Identify strong TR & EM
3.TRIGGERS
• high speed
• difficulty in control the vehicle
4.EMOTIONS:BEFORE/AFTER
• customer worried about delay process of claim
• they feel happy for quick access of claim
10.YOUR SOLUTION
The insurance company develop the software with artificial intelligent.
It help the customer to detect the damage and estimate the current market value for the claim.The process is able to quick access claim the insurance for The Customer
8.channels of behavior
Online
• Data source
• cloud
• AI with DL algorithm
Offline
• Estimate the cost
• Damage detection
Identify strong TR & EM

4. REQUIREMENT ANALYSIS

4.1 FUNCTIONAL REQUIREMENTS

FR NO	FUNCTIONAL REQUIREMENTS (EPIC)	SUB REQUIREMENTS (SUBTASK/STORY)
FR 1	UserRegistration	✓ Registrationthroughlink ✓ Registration through form
FR 2	User Confirmation	✓ confirmation through message ✓ confirmation through mail
FR 3	User Interface	✓ user login form ✓ user Admin form
FR 4	DetectingDamage	✓ Detecting the location where the damages occurs.
FR 5	Database	✓Stored in cloud for seamless connectivity ✓ to store, retrieve, and run queries on Data

		✓ A DBMS serves as an interface Between an end-user and a database, Allowing users to create, read, update, And delete data in the database.
FR 6	Cloud	✓cloud collects the data from the input and store the data to provide output ✓Cloud computing allows mobile access to corporate data via smartphones and devices, which, considering over
FR 7	VGG16model	✓ It is used for object detection and classification algorithm which is able to classify 1000 images of 1000 different categories with 92.7% accuracy. ✓ It is one of the popular algorithms for image classification and is easy to use with transfer learning.
FR 8	DL Algorithm	✓ It uses artificial neural networks to perform sophisticated computations on large amounts of data.
FR 9	Preprocessing	✓ an improvement of the image data that suppresses unwilling distortions or enhances some image features important for further processing

4.2 Non-Functional requirements

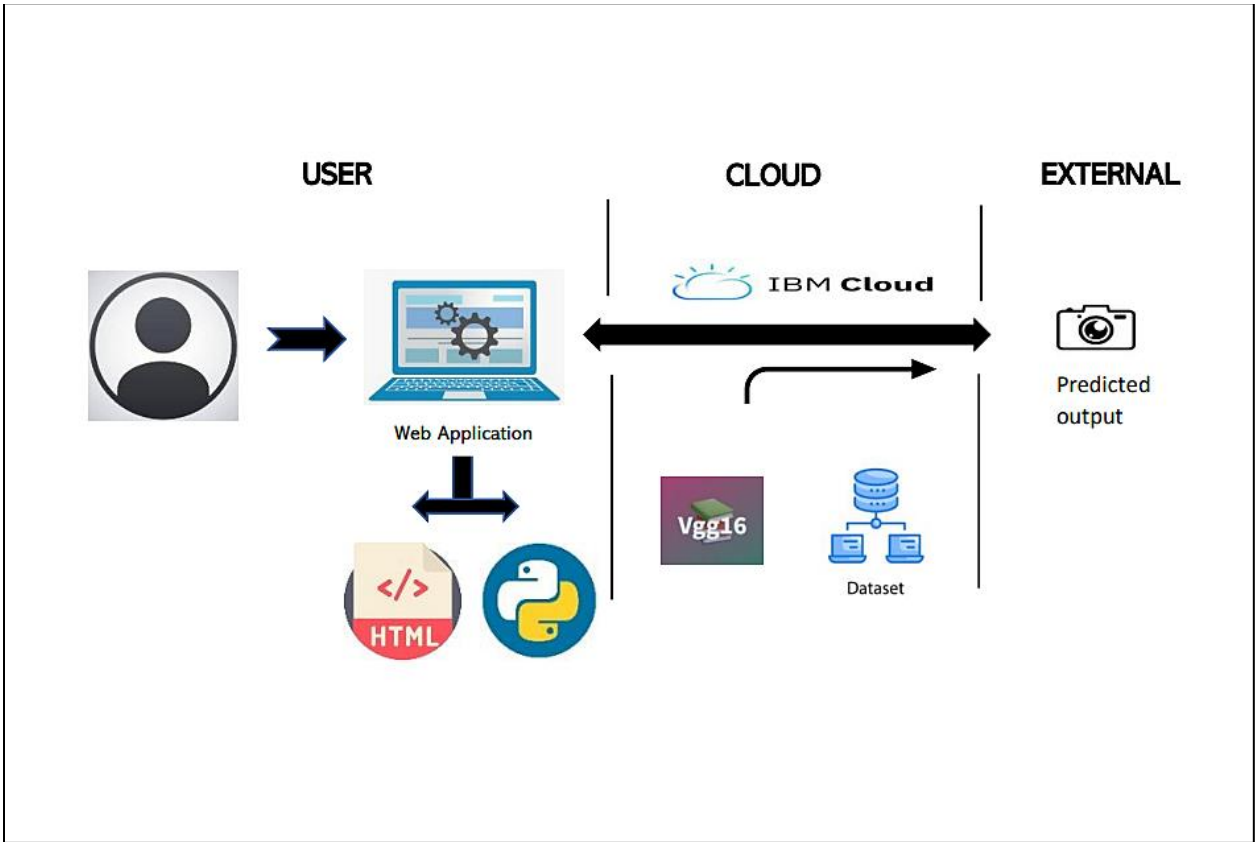
NFR NO	NON FUNCTIONAL REQUIREMENTS	DESCRIPTION
NFR 1	Usability	✓ About this model, they easily upload the image via online form and easy to process the claim ✓ make it settlement as soon as possible
NFR 2	Security	✓ they never share the customer details to others ✓ They make the information confidential about the customer. ✓ The customer should not Worry about their safety through the link
NFR 3	Reliability	✓ Easytouse ✓ Trustworthy ✓ High accuracy
NFR 4	Performance	✓ The customer know about the process which make them to feel relax about delay claim ✓ They provide the customer satisfaction through their performance
NFR 5	Availability	✓ know the current process ✓ know about queries if they need ✓ Apply the claim as their comfort platform
		✓ company know about the customer status

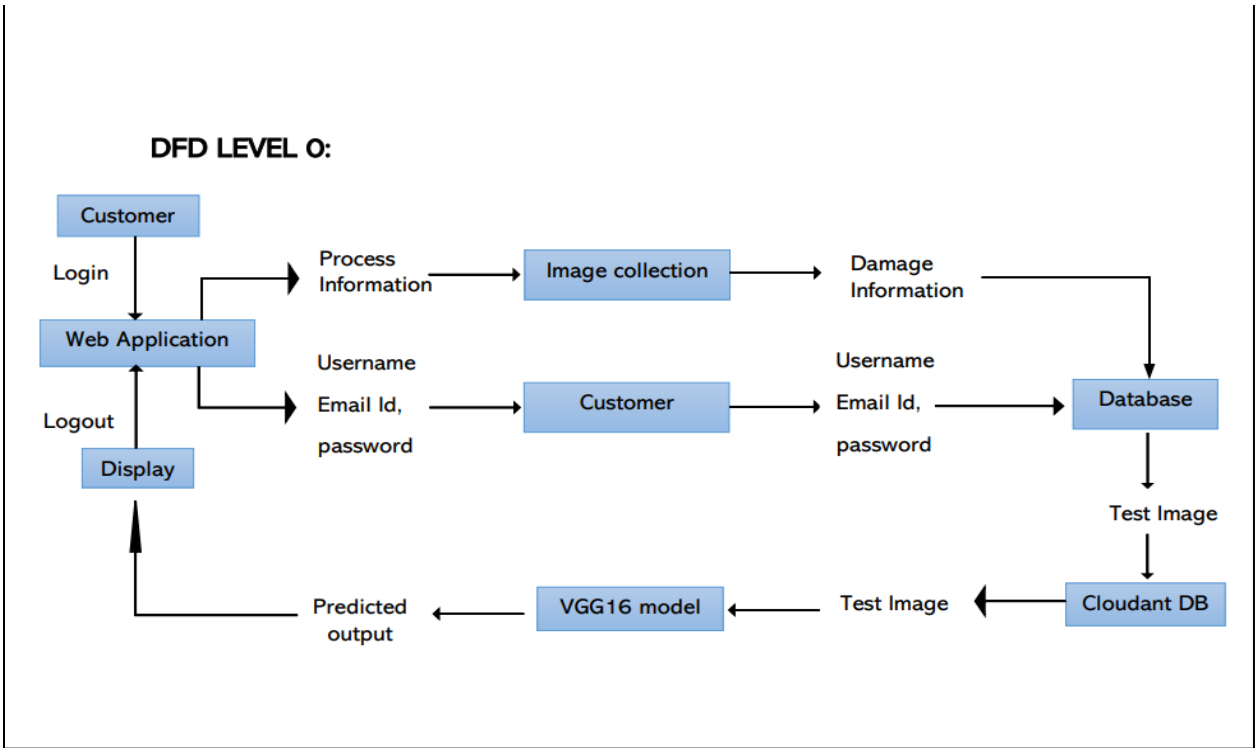
NFR 6	Scalability	✓ customer should not worry about claim ✓ make the quick settlement

5. PROJECT DESIGN

5.1 Data Flow Diagrams

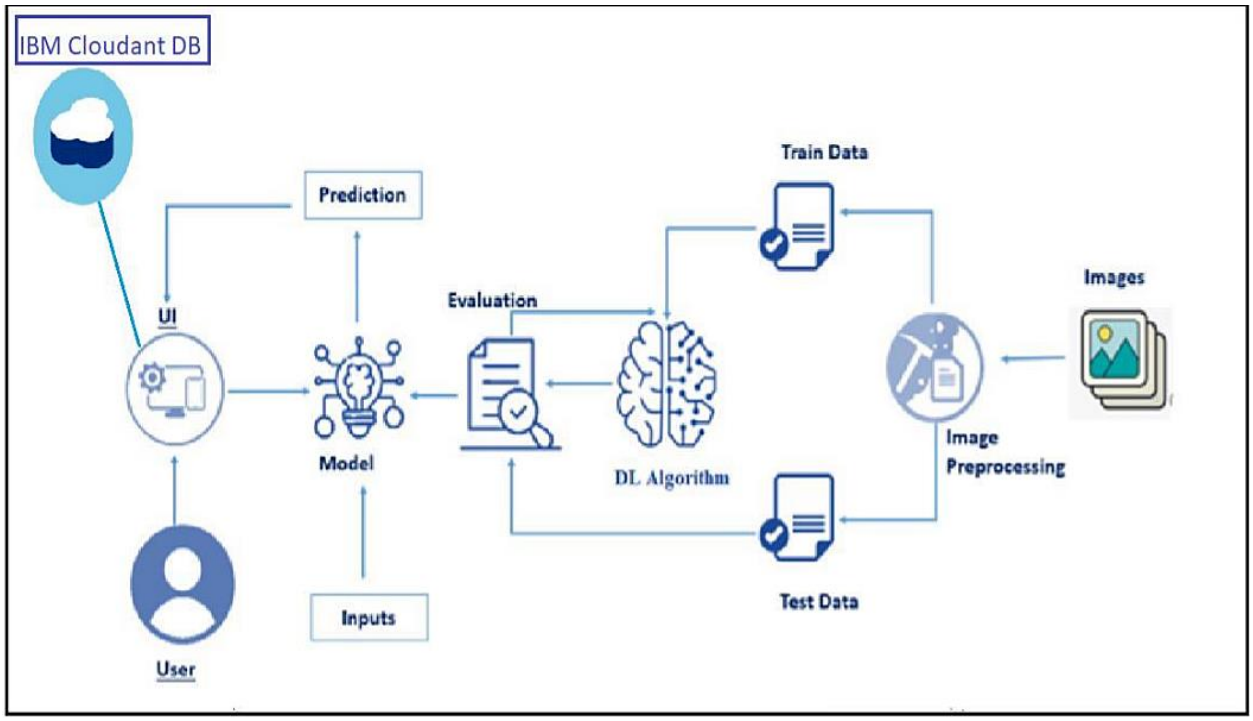
A Data Flow Diagram (DFD) is a traditional visual representation of the information flows within a System. A neat and clear DFD can depict the right amount of the system requirement graphically. It shows How data enters and leaves the system, what changes the information, and where data is stored.



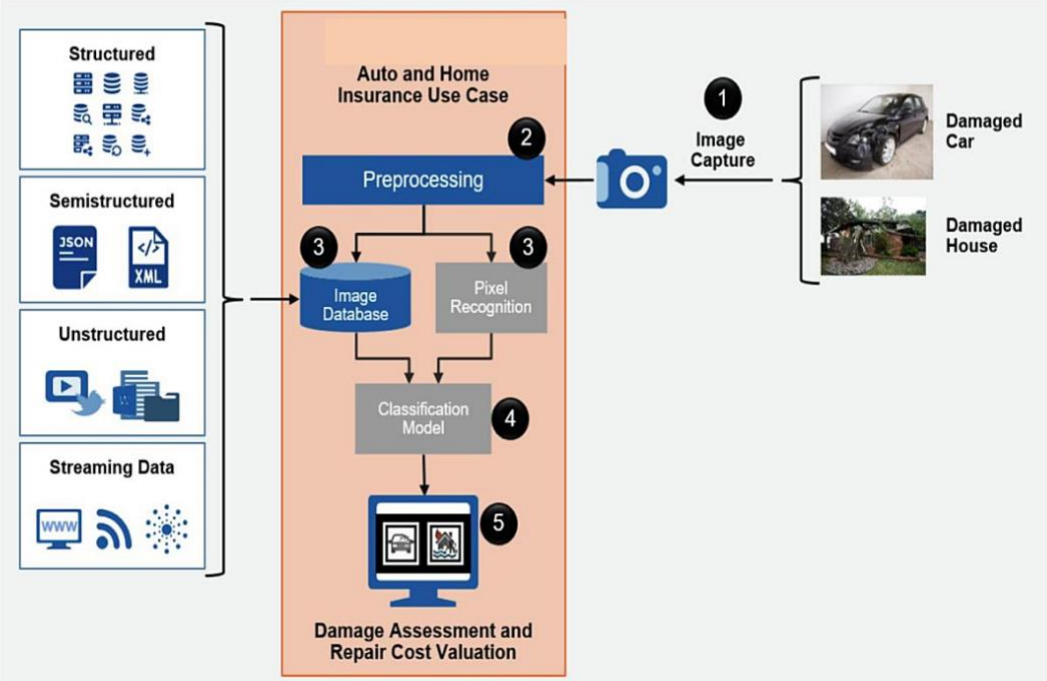


5.2 SOLUTION & TECHNICAL ARCHITECTURE

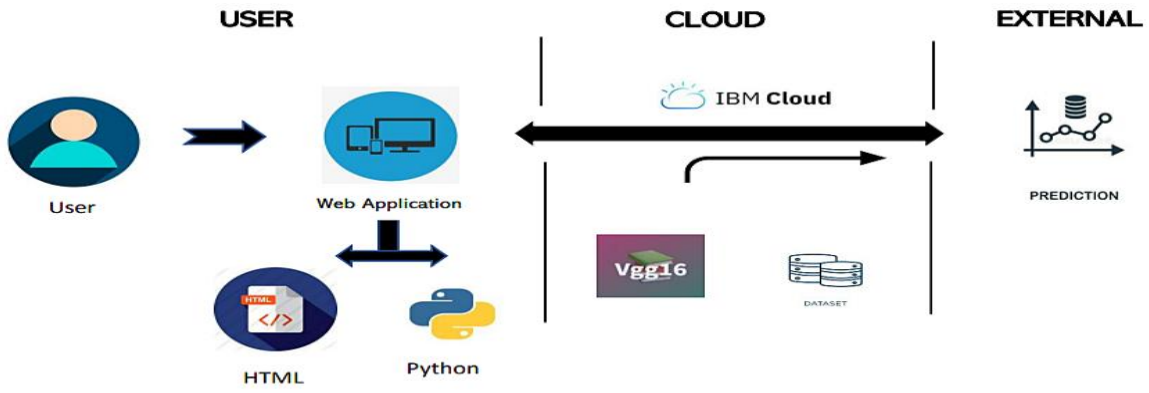
SOLUTION ARCHITECTURE:



OUTLINE ARCHITECTURE:



TECHNICAL ARCHITECTURE:



5.3 USER STORIES

The following list out all the user stories for the product.

User Type	Functional Requirements (Epic)	User stories Number	User story/ task	Acceptance Criteria	Priority	Release
Patient (Mobile user)	Registration	USN 1	As a user, I can register for the application by entering name, email ID, password.	I can access my account / dashboard	High	Sprint 1
		USN 2	As a user, I will receive a confirmation email once I have registered for the application.	I can receive confirmation Email & dick confirm	High	Sprint 1
		USN 3	As a user, I can register for the application through link in Google chrome	I can register & access the dashboard with Google	High	Sprint 1
		USN 4	As a user, I can register for the application through Gmail.	I can register through Gmail.	Medium	Sprint 2
	Login	USN 5	As a user, I can login to the application by entering registered email ID, Password.	I can receive login credential	High	Sprint 1

		USN 6	As a user, I can logout from the application when logout is clicked it redirects to the logout.htm page.	I can also receive logout credential	High	Sprint 1
	Interface	USN 7	As a user, the interface should be easy to access	I Can able to access easily	Medium	Sprint 2
Patient (Web user)	Dashboard	USN 8	As a user, I can give the specific Info (vehicle image, damage location, variation in damage, screening test,)	I can able to know about how depth the damage is	High	Sprint 1
Patient (Input)	View Manner	USN 9	As a user, I can view damage details in visual representation (images)	I Can easily understand by using images visually.	High	Sprint 1
	color visibility	USN 10	As a user, I can able to see the vehicle color how depth the damage is	I can easily know about the condition of vehicle	High	Sprint 2
	knowledge	USN 11	As a user, I can able to know about the claim amount details in early stage	I can easily understand the estimated amount is affordable	High	Sprint 2

Administrator	Risk Tolerant	USN 12	An administrator who is handing the website should update and take care of the application	Admin should Monitor the records property.	Medium	Sprint 2

6.PROJECT PLANING AND SCHEDULING

6.1 SPRINT PLANING AND ESTIMATION

Sprint	Functional requirement	User Story Number	User Story/Task	Story Points	Priority	Team Members
Sprint-1	Registration	USN-1	As a user, I can register for the application by entering name, email ID, password	4	High	Akash Aravinth S
Sprint-1		USN-2	As a user, I will receive a confirmation email once I have registered for the application	2	High	Kamalesh S
Sprint-2		USN-3	As a user, I can register for the application through link in Google chrome	2	Medium	Sowmiya V
Sprint-2		USN-4	As a user, I can register for the application through Gmail.	5	High	Yogeshwari B
Sprint-2	Login	USN-5	As a user, I can login to the application by entering registered email ID, Password.	5	High	Yogeshwari B
Sprint-3	Dashboard	USN-6	As a user, I can give the specific Info (vehicle	5	High	Akash Aravinth S

			image, damage location, variation in damage screening test).			
		USN-7	In this manage described the below functions like manage system admins manage roles of user manage user permission and etc.	3	Medium	Kamalesh S
Sprint-1	Logout	USN-8	As a user, I can logout from the application when logout is clicked it redirects to the logout.html page.	6	High	Sowmiya V
Sprint-4	Feedback	USN-9	As a Customer care executive, I can able to interact with all the customer & get their feedback	3	Medium	Yogeshwari B
Sprint-3	Image Preprocessing	USN-10	The uploaded image is Preprocessed and fed into trained vgg16 model	4	High	Kamalesh S
Sprint-4	Classification and Prediction	USN-11	The VGG16 model classify & predict the damage	5	High	Akash Aravinth S
Sprint-4	Generation	USN-12	Based on prediction of damage ,they estimate the cost	4	High	Sowmiya V

6.2 PROJECT TRACKER,VELOCITY & BURNDOWN CHART

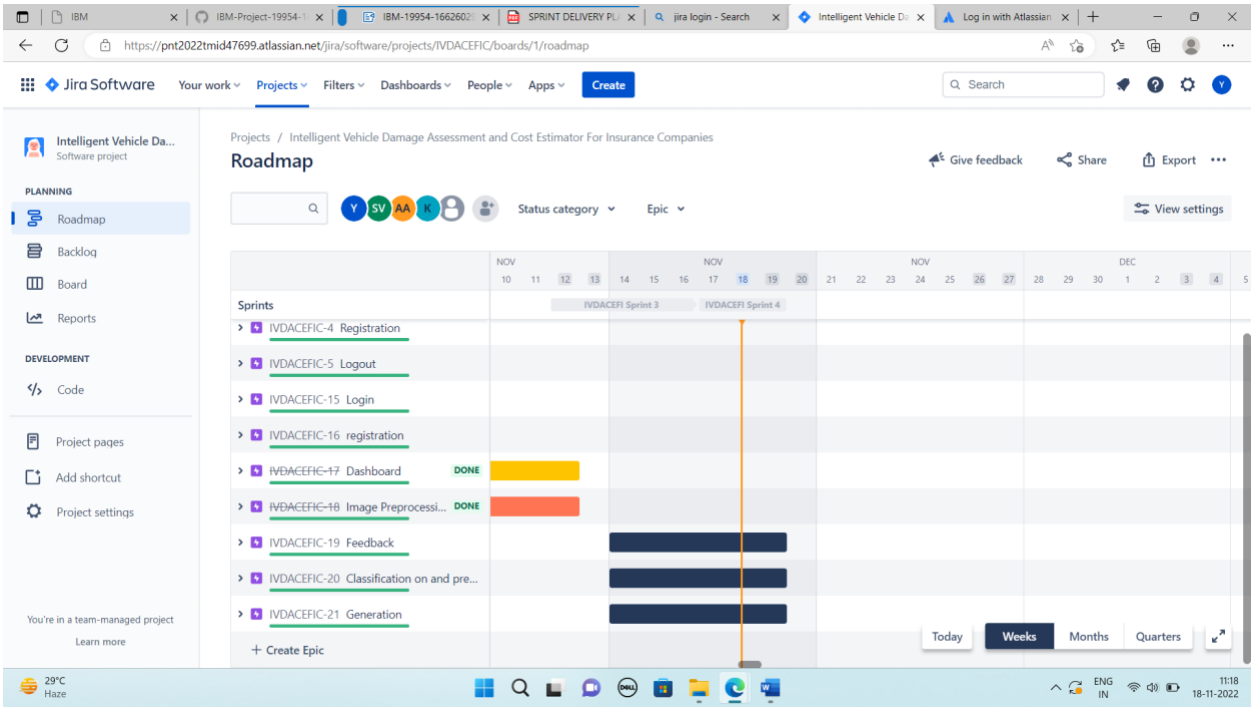
Sprint	Total Story Point	Duration	Sprint Start Date	Sprint End Date(Planned)	Story Points Completed(as on Planned End Date)	Sprint Release Date (Actual)
Sprint-1	12	6 days	29 Oct 2022	04 Nov 2022	12	04 Nov 2022
Sprint-2	12	6 days	31 Oct 2022	05 Nov 2022	12	05 Nov 2022
Sprint-3	12	6 days	07 Nov 2022	12 Nov 2022	12	12 Nov 2022
Sprint-4	12	6 days	14 Nov 2022	19 Nov 2022	12	19 Nov 2022

VELOCITY:

AV for Sprint 1= 12/6 =2 points
AV for Sprint 2= 12/6 =2 points
AV for Sprint 3= 12/6 =2 points
AV for Sprint 4= 12/6 =2 points

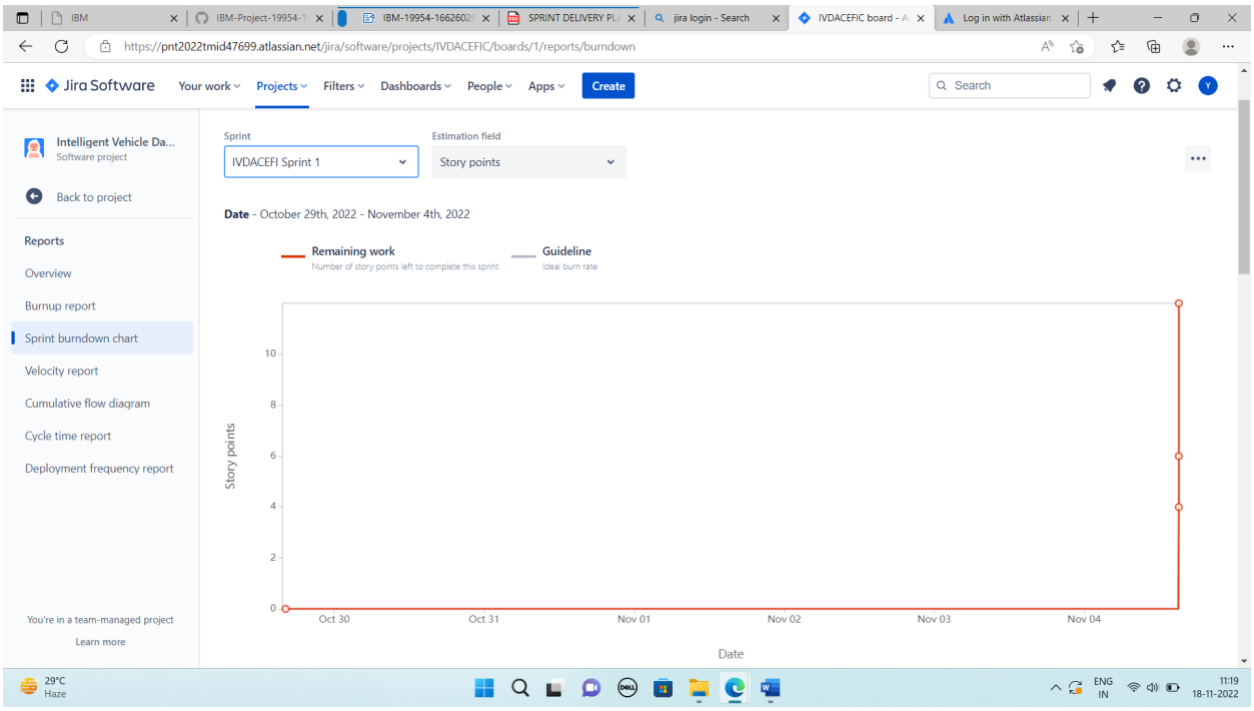
6.3 REPORT FROM JIRA

Jira Roadmap:

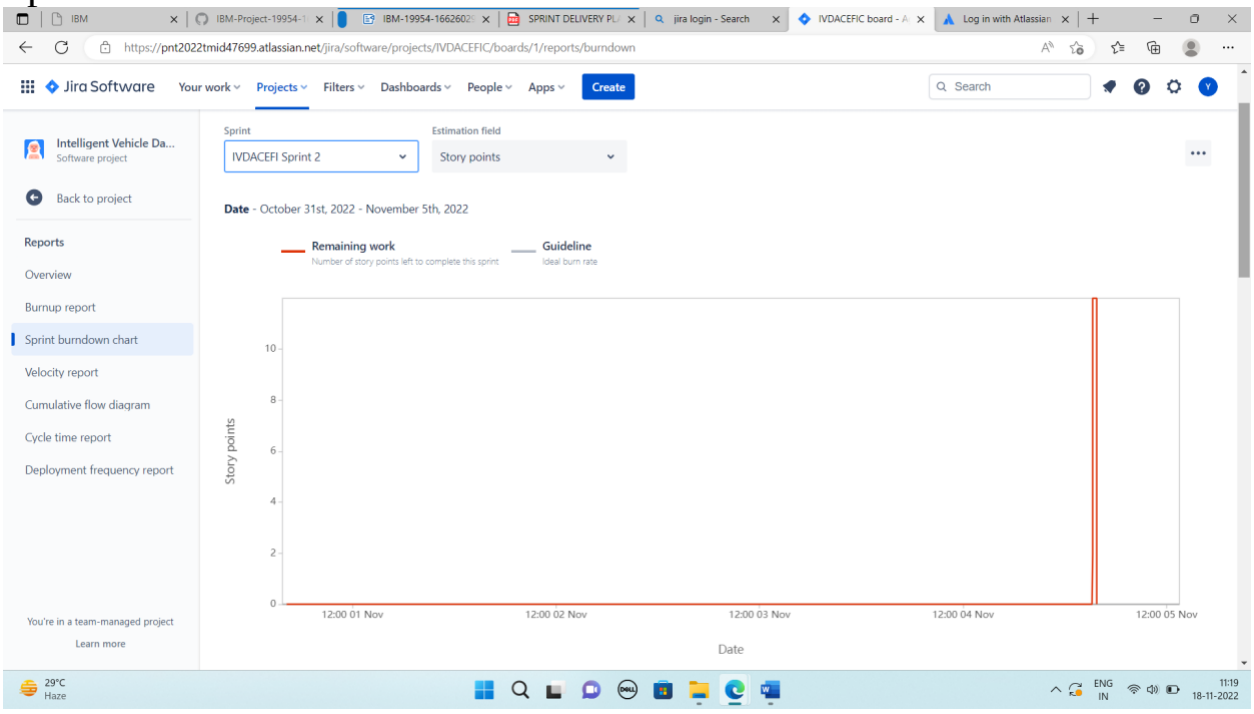


Burndown Chart

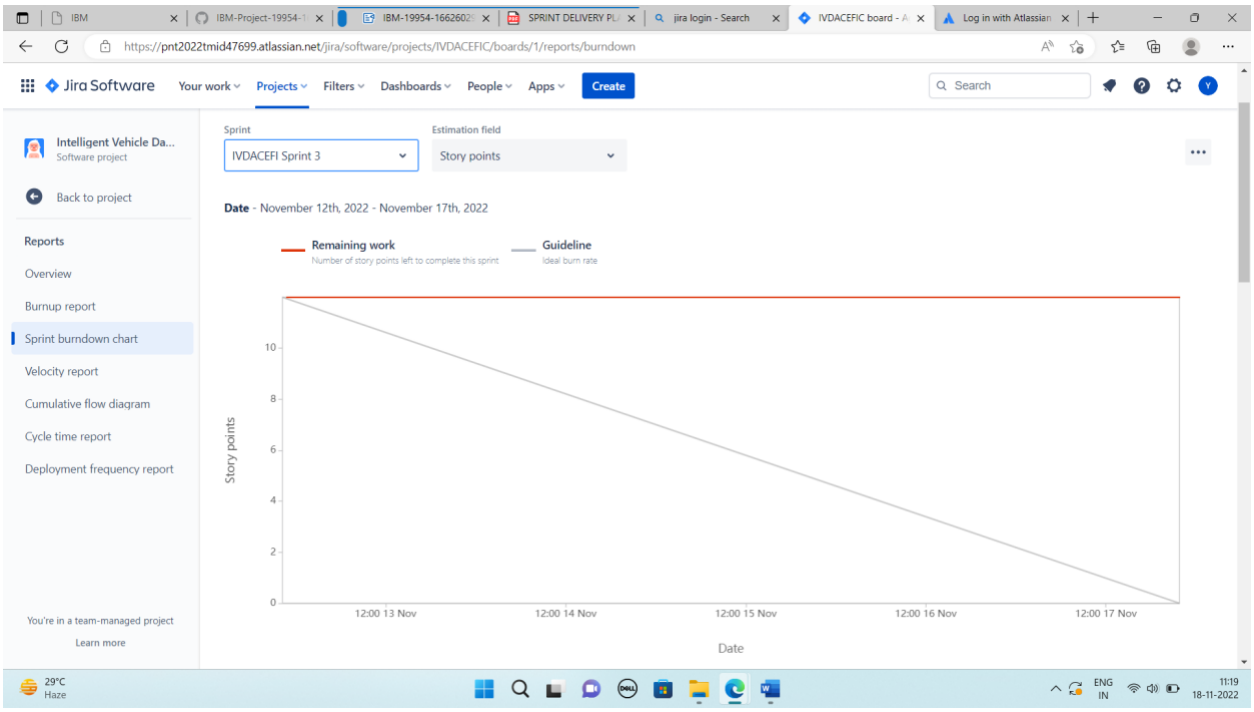
Sprint 1



Sprint 2



Sprint 3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Jira Software
Your work
Projects
Filters
Dashboards
People
Apps
Create
Search
Intelligent Vehicle Da...
Software project
Back to project
Reports
Overview
Burnup report
Sprint burndown chart
Velocity report
Cumulative flow diagram
Cycle time report
Deployment frequency report
You're in a team-managed project
Learn more
Sprint
IVDACEFI Sprint 3
Estimation field
Story points
Date - November 12th, 2022 - November 17th, 2022
Remaining work
Number of story points left to complete this sprint
Guideline
Ideal burn rate
Story points
10
8
6
4
2
0
12:00 13 Nov
12:00 14 Nov
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Haze
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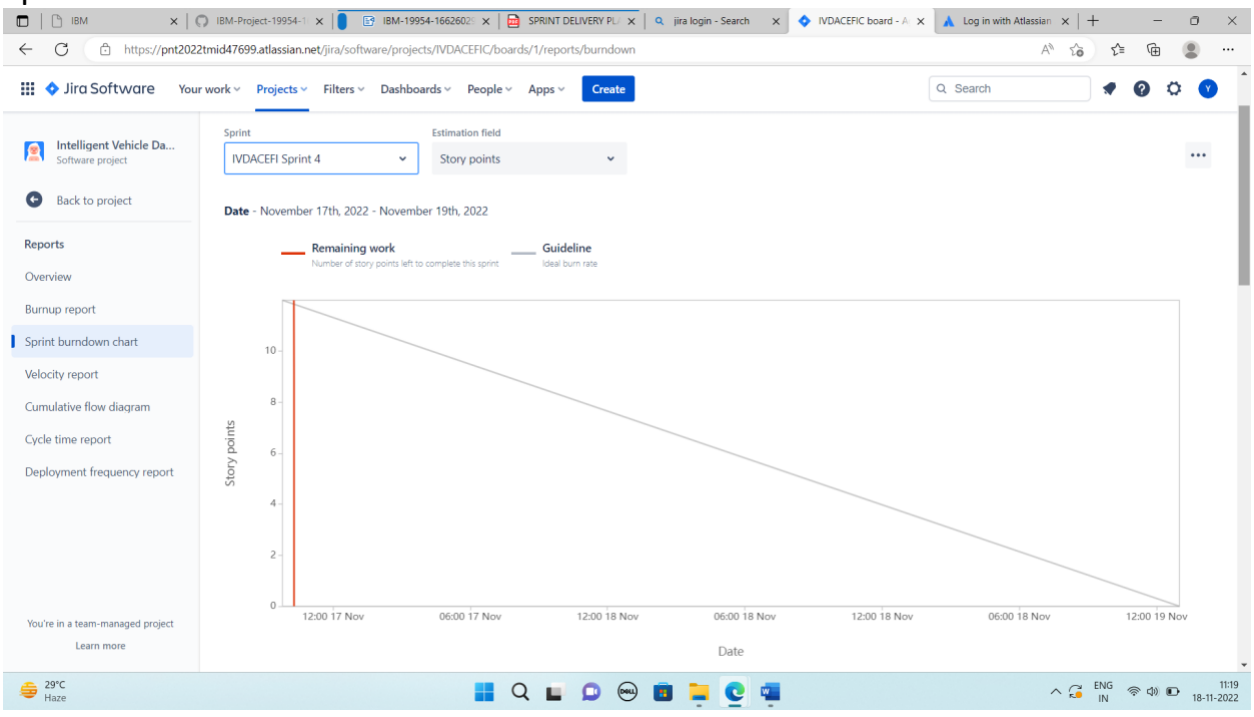
Sprint 4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Jira Software
Your work
Projects
Filters
Dashboards
People
Apps
Create
Search
Intelligent Vehicle Da...
Software project
Back to project
Reports
Overview
Burnup report
Sprint burndown chart
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You're in a team-managed project
Learn more
Sprint
IVDACEFI Sprint 4
Estimation field
Story points
Date - November 17th, 2022 - November 19th, 2022
Remaining work
Number of story points left to complete this sprint
Guideline
Ideal burn rate
Story points
10
8
6
4
2
0
12:00 17 Nov
06:00 17 Nov
12:00 18 Nov
06:00 18 Nov
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12:00 19 Nov
Date
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Haze
ENG
IN
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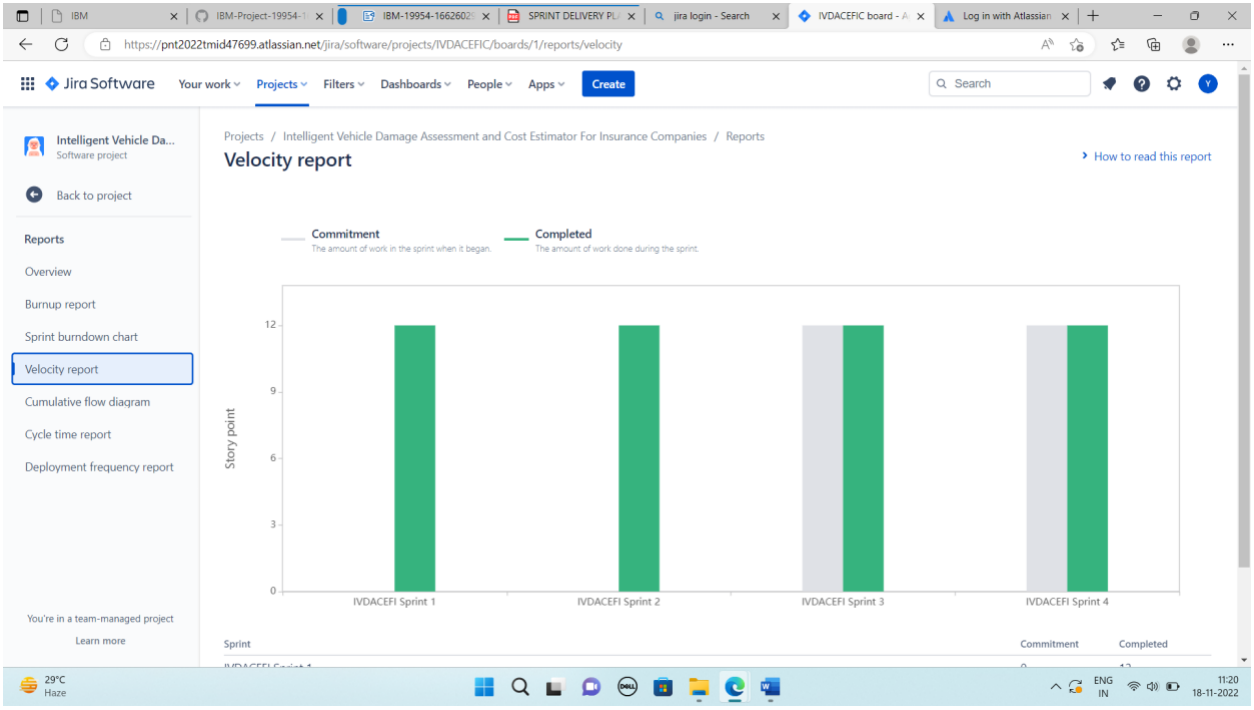
18-11-2022

Velocity Report



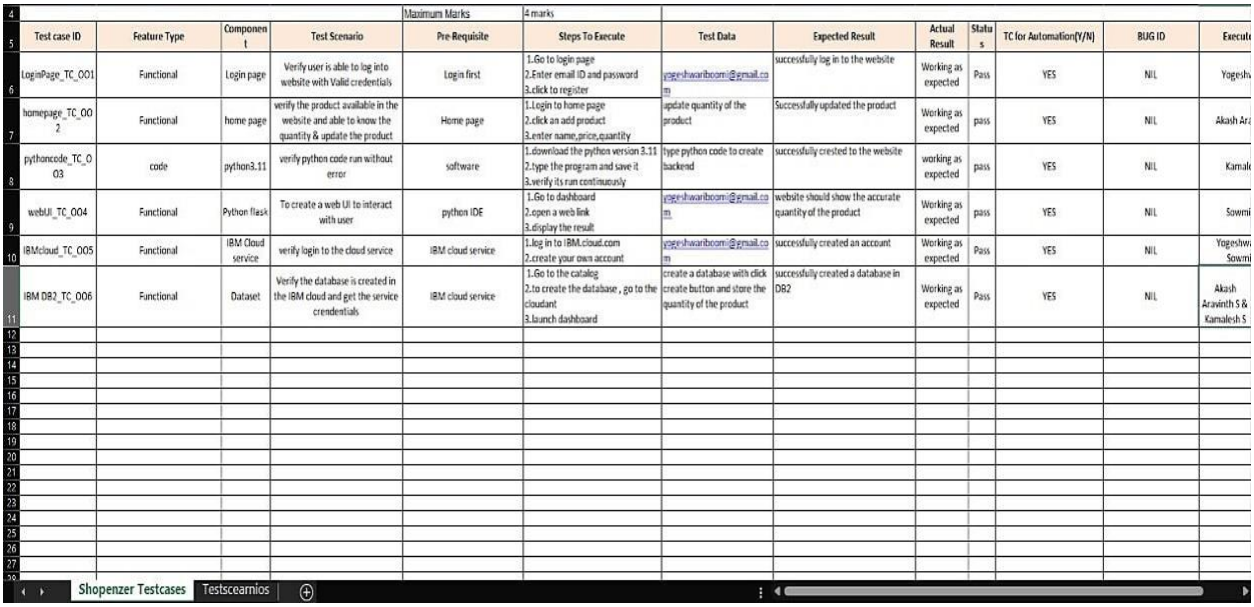
7.CODING AND SOLUTION
FEATURES

7.1 Features 1 : Upload the Image
7.2 Features 2: Predict the Image
7.3 Features 3: Display the Prediction

8.TESTING

Test scenarios:
1. Verify python code is run without error
2. Verify the login the cloud Service
3.Verify the images are stored in the database
4.Verify to create a service credentials
5.To create web UI to interact with user
6.Get an predicted image in display

8.1 TEST CASES



					Maximum Marks	4 marks						
5	Test case ID	Feature Type	Component	Test Scenario	Pre-Requisite	Steps To Execute	Test Data	Expected Result	Actual Result	Status	TC for Automation(Y/N)	BUG ID	Execute
6	LoginPage_TC_001	Functional	Login page	Verify user is able to log into website with Valid credentials	Login first	1.Go to login page 2.Enter email ID and password 3.click to register	yogeshwaribcom@gmail.com	successfully log in to the website	Working as expected	Pass	YES	NIL	Yogesh
7	homepage_TC_002	Functional	home page	verify the product available in the website and able to know the quantity & update the product	Home page	1.Login to home page 2.click an add product 3.enter name,price,quantity	update quantity of the product	Successfully updated the product	Working as expected	pass	YES	NIL	Akash Ar
8	pythoncode_TC_003	code	python3.11	verify python code run without error	software	1.download the python version 3.11 2.type the program and save it 3.verify its run continuously	type python code to create backend	successfully crested to the website	working as expected	pass	YES	NIL	Kamal
9	webUI_TC_004	Functional	Python flask	To create a web UI to interact with user	python IDE	1.Go to dashboard 2.open a web link 3.display the result	yogeshwaribcom@gmail.com	website should show the accurate quantity of the product	Working as expected	pass	YES	NIL	Sowmi
10	IBMcloud_TC_005	Functional	IBM Cloud service	verify login to the cloud service	IBM cloud service	1.log in to IBM.cloud.com 2.create your own account	yogeshwaribcom@gmail.com	successfully created an account	Working as expected	Pass	YES	NIL	Yogeshwa Sowmi
11	IBM DB2_TC_006	Functional	Dataset	Verify the database is created in the IBM cloud and get the service crendentials	IBM cloud service	1.Go to the catalog 2.to create the database , go to the cloudant 3.launch dashboard	create a database with click create button and store the quantity of the product	successfully created a database in DB2	Working as expected	Pass	YES	NIL	Akash Aravinth S & Kamalesh S
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8.2 USER ACCEPTANCE TESTING

1.Purpose of Document

The purpose of this document is to briefly explain the test coverage and open issues of [product name]project time of the release to User Acceptance Testing(UAT).

2.Defect Analysis

This report shows the number of resolved or closed bugs at each severity level,and how they are resolved.

Resolution	Severity1	Severity2	Severity3	Severity4	Sub Total
By design	5	3	2	0	10
Duplicate	0	0	0	1	1
External	2	0	0	1	3

Fixed	6	2	0	0	8
Not Reproduced	0	1	1	0	2
Skipped	0	0	0	0	0
Won't Fix	0	0	0	0	0
Totals	13	6	3	2	24

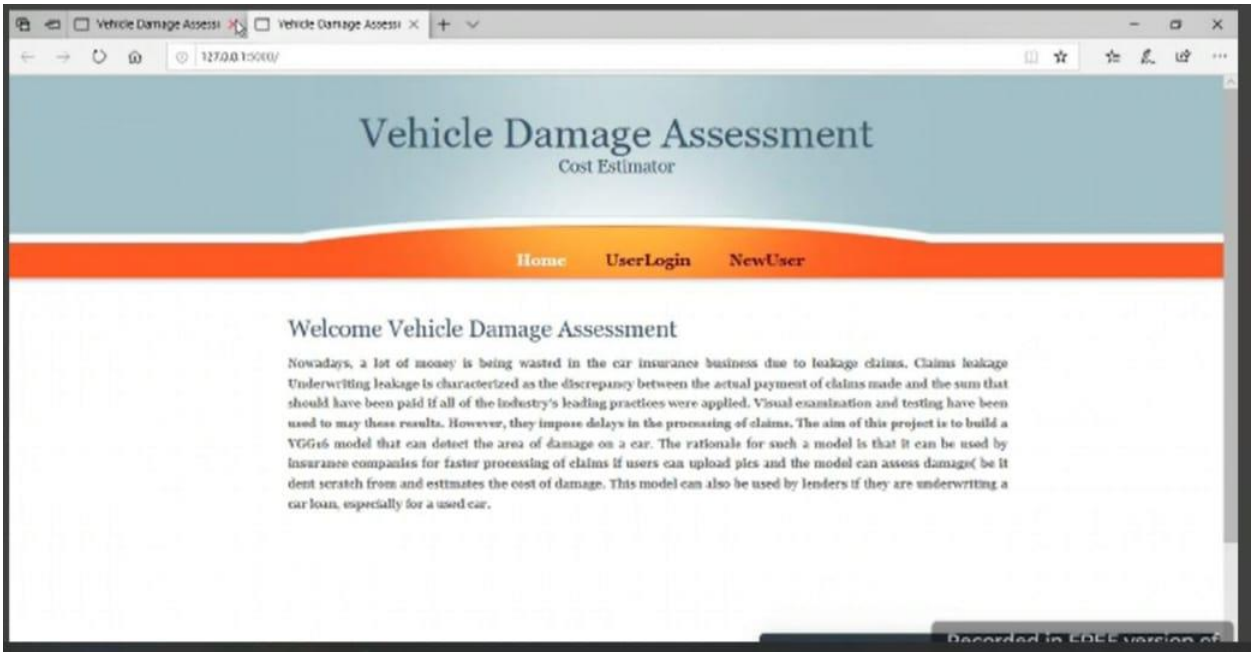
3.Test case Analysis

This report shows the number of test cases that have passed ,failed,and untested.

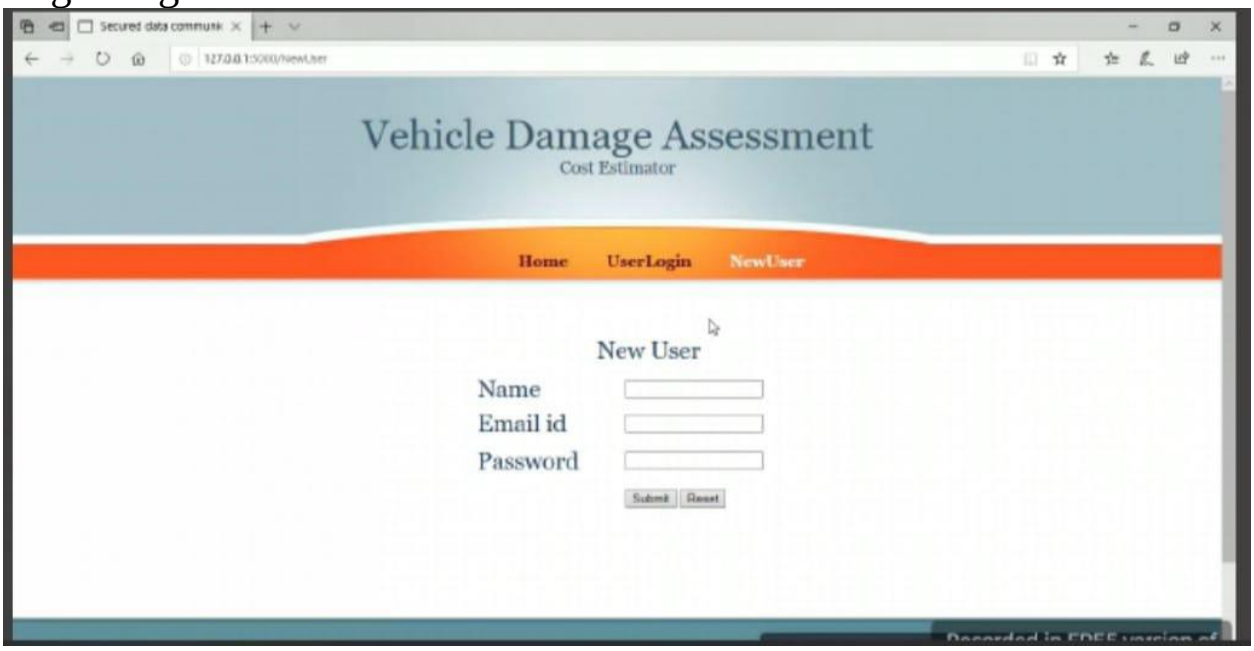
Section	Total cases	Not tested	Fail	Pass
Interface	1	0	0	1
Login	2	0	0	2
Logout	1	0	0	1
Limit	2	0	0	2

9.RESULT

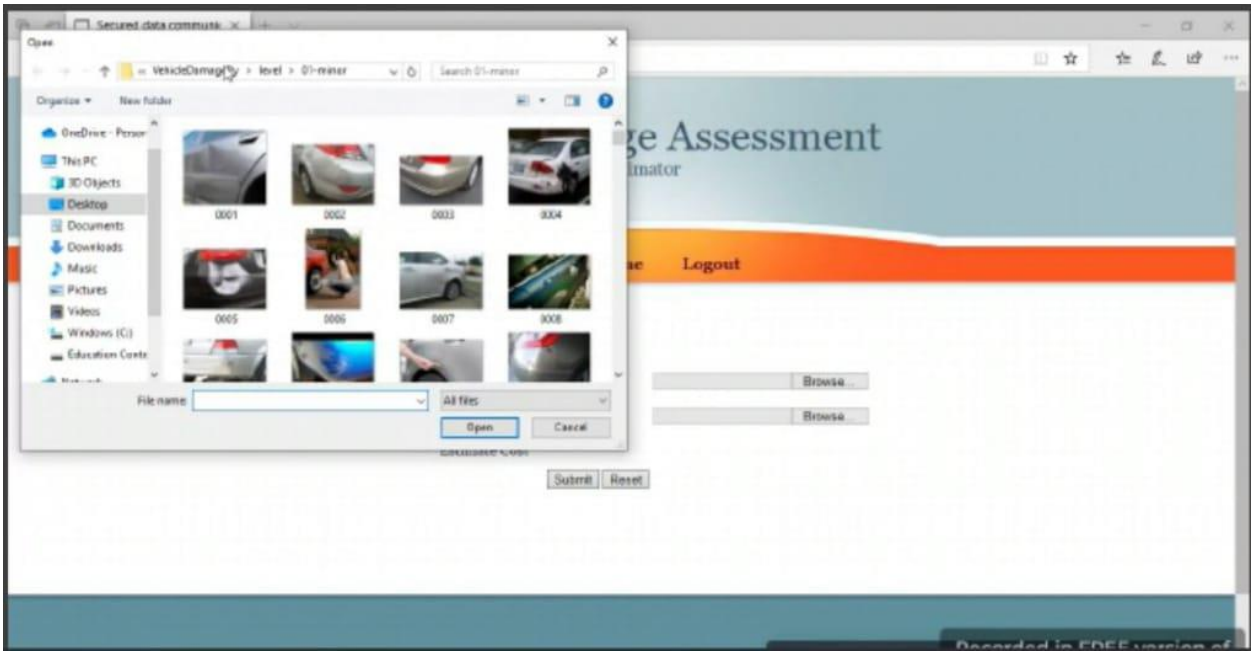
Home Page :



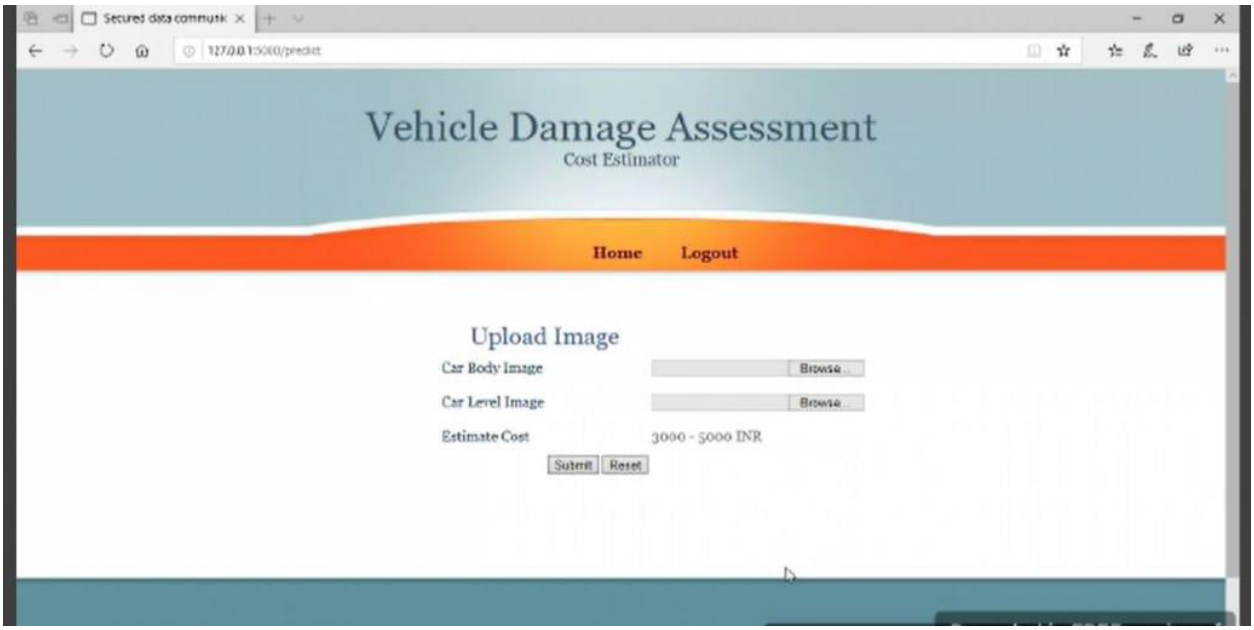
Login Page:



Data Set:



Prediction Page:



10.ADVANTAGE & DISADVANTAGE

ADVANTAGE

- Estimating damages with over 90% accuracy of model for vehicle damage detection.
- The process is speed up the claim to the customer for their needs.
- AI has ability to analyse big data sets - pulling together customer insights and leading to predictive analysis.

DISADVANTAGE

- This may result in avoidable prediction inaccuracies as a result of human error.
- Prediction of damageis difficult due to strong similarities between many images.
- AI may bring considerable threats of privacy problem, ethical concerns and prediction error.

CONCLUSION

This Project has generally discussed the design and implementation of damage assessment for car insurance by developing deep learning car

damage classification model on website development platform where user will upload image or images of damaged car with help of phone's camera. then according to damage calculation, the total cost of car will be displayed in a report format. This system is tested over a wide range of images yielding high accuracy rate