Capstone Project Weekly Progress Report

Semester	Fall-2024 Semester 3rd
Course Code	AML-3406
Section	Section 1
Project Title	Car Damage Detection
Group Name	Group B
Student names/Student IDs	Sakshi (C0908000) Bansil Patel (C0912873) Harsh Mohile (C0912872) Meet Patel (C0910378) Rachit Bhatt (C0902810)
Reporting Week	Week 5
Faculty Supervisor	William Pourmajidi

1. **Grade the level of collaboration from different aspects between team members:**
(use: good, medium, below expectation)

Sakshi	Bansil Patel	Harsh Mohile	Meet Patel	Rachit Bhatt
Good	Good	Good	Good	Good

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2. Tasks outlined in the previous Weekly Progress Report for this reporting week at the individual level and group level

2.1 Individual tasks (each team member)
Sakshi: Researched for CI/CD Pipeline for
Mlops.
Bansil Patel & Meet Patel: Model Selection and experimentation.
Harsh Mohile & Rachit Bhatt: Research on Docker for Deployment + Version control
and Augmentation

2.2 Your team's tasks
- Concentrated on data preprocessing and augmentation for our car damage detection project.
- Conducted thorough research on CI/CD pipelines to optimize our development workflow and improve deployment processes.
- Investigated the use of Docker for deployment, evaluating its benefits for containerization and scalability.
- Focused on selecting the most suitable algorithms to meet our project goals effectively.
- Strengthened our workflow by establishing a version control system to enhance collaboration and project management.
- These efforts play a crucial role in driving our project forward.

3. Progress made in Reporting Week at an individual level and group level

3.1 Individual progress
Sakshi: Gained knowledge about CI/Cd pipeline.
Bansil Patel & Meet Patel: Evaluated some models on the dataset.
Harsh Mohile & Rachit Bhatt: Contributed for Github Management and completed Data
Preprocessing.

3.2 Your team's progress

- Enhanced the quality of the dataset through thorough cleaning and transformation processes.
- Implemented various augmentation techniques to increase dataset diversity and strengthen model robustness.
- Evaluated and selected the most suitable algorithms and learned about CI/Cd pipeline to align with our project goals, ensuring peak performance.

- Established an efficient version control system to facilitate collaboration and keep our workflow organized.
- Gained knowledge about docker for deployment.

4. The areas/tasks you could not make progress and/or complete as scheduled or the difficulties encountered in this reporting week at individual level and group level.

4.1 Individual project blockers

Sakshi: N/A
Harsh Mohile: N/A
Rachit Bhatt: N/A
Bansil Patel & Meet Patel: Experimenting different models.

4.2 Your team's project blockers

- Overall, the difficult part in this week was model selection. However, we handled it nicely.

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5. Tasks to be completed in next week at individual level and group level

5.1 Individual tasks

Sakshi: Visualization and documentation.

Bansil Patel & Meet Patel: Applying Feature Engineering to enhance model's learning ability.

Harsh Mohile & Rachit Bhatt: Train the selected models and record their performance metrics.

5.2 Your team's tasks

- Identify various features that could help in detecting car damage.
- Feature Engineering to enhance model's learning ability.
- Model Training and Compare the results of different models for effectiveness.

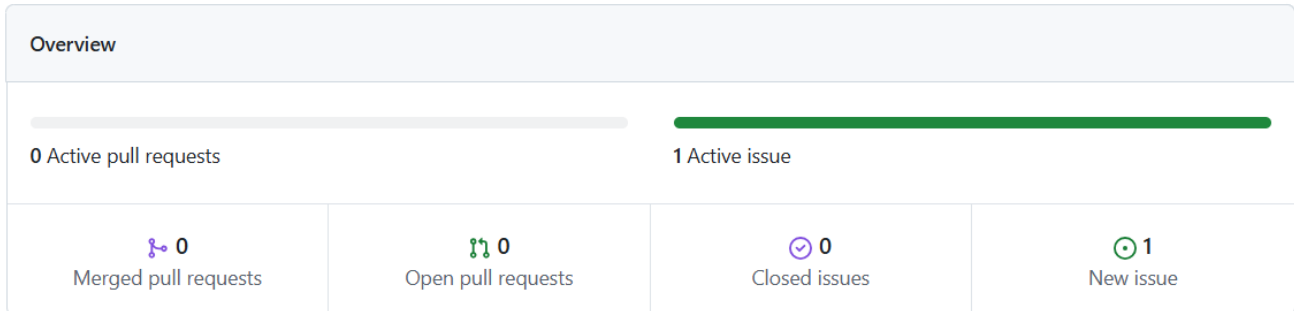## 6. Include the tasks from your sprint planning (Github/Zenhub) for the present period.

Figure 1: Status Chart of GitHub Issues in Milestone

7. **Include charts/graphs (e.g., burn down charts) from your project management tool (Github/Zenhub) that shows your progress for the period of this report.**

September 30, 2024 – October 7, 2024   Period: 1 week ▾

Overview

0 Active pull requests   **1** Active issue

⎇ 0	⇅ 0	⊘ 0	⊙ 1
Merged pull requests	Open pull requests	Closed issues	New issue

There hasn't been any commit activity on rachit-bhatt/Capstone-Project in the last week.

Want to help out?

⑃ Fork this repository

⊙ **1** Issue opened by **1** person

⊙ **Study on Heroku.**
    #34 opened 5 days ago

💬 **1** Unresolved conversation

Figure 2: Contributors in the Week

8. **Include a note and address to your project Github with list of codes uploaded/updated on Github in this reporting week.**

GitHub: https://www.github.com/rachit-bhatt/Capstone-Project

```
1  epochs=5
2
3  # Train the model
4  history_eff = model_eff.fit(
5      train_ds,
6      epochs=epochs,
7      validation_data=valid_ds,
8      verbose=1,
9  )
10
11 # Save training and validation histories for later analysis
12 all_train_histories = [history_eff.history['accuracy']]
13 all_val_histories = [history_eff.history['val_accuracy']]

Epoch 1/5
35/35 ───────────── 188s 5s/step - AUC: 0.6027 - accuracy: 0.3963 - f1_score: 0.1340 - loss: 10.3684 - val_AUC: 0.5114 - val_accuracy: 0.3745 - val_f1_score: 0.3554 - val_loss: 396.7017
Epoch 2/5
35/35 ───────────── 250s 7s/step - AUC: 0.5140 - accuracy: 0.3471 - f1_score: 0.0000e+00 - loss: 5.8994 - val_AUC: 0.4966 - val_accuracy: 0.3636 - val_f1_score: 0.2646 - val_loss: 52.6579
Epoch 3/5
35/35 ───────────── 209s 6s/step - AUC: 0.4978 - accuracy: 0.3455 - f1_score: 0.0000e+00 - loss: 5.2170 - val_AUC: 0.5377 - val_accuracy: 0.3818 - val_f1_score: 0.1321 - val_loss: 15.6876
Epoch 4/5
35/35 ───────────── 157s 4s/step - AUC: 0.5134 - accuracy: 0.3648 - f1_score: 0.0000e+00 - loss: 4.7851 - val_AUC: 0.5799 - val_accuracy: 0.3927 - val_f1_score: 0.0608 - val_loss: 8.3147
Epoch 5/5
35/35 ───────────── 159s 5s/step - AUC: 0.4948 - accuracy: 0.3574 - f1_score: 0.0000e+00 - loss: 4.4633 - val_AUC: 0.5314 - val_accuracy: 0.3236 - val_f1_score: 0.0583 - val_loss: 8.4688
```

Figure 3: Applying NN on a Sample Dataset

```
42  img_shape = (img_size[0], img_size[1], 3)
43
44  base_model = DenseNet169(include_top=False, weights="imagenet", input_shape=img_shape, pooling='max')
45  base_model.trainable = True
46  x = base_model.output
47  x = BatchNormalization(axis=-1, momentum=0.99, epsilon=0.001)(x)
48  x = Dense(256, kernel_regularizer=regularizers.l2(0.016),
49          activity_regularizer=regularizers.l1(0.006),
50          bias_regularizer=regularizers.l1(0.006), activation='relu')(x)
51  x = Dropout(rate=.4, seed=123)(x)
52  output = Dense(class_count, activation='softmax')(x)
53  model_eff = Model(inputs=base_model.input, outputs=output)
54  model_eff.compile(Adamax(learning_rate=lr), loss='categorical_crossentropy',
55          metrics=['accuracy', 'AUC', F1Score()])
56
57  model_eff.summary()
58
```

```
Model: "functional"
```

Layer (type)	Output Shape	Param #	Connected to
input_layer (InputLayer)	(None, 224, 224, 3)	0	-
zero_padding2d (ZeroPadding2D)	(None, 230, 230, 3)	0	input_layer[0][0]
conv1_conv (Conv2D)	(None, 112, 112, 64)	9,408	zero_padding2d[0...
conv1_bn (BatchNormalizatio...	(None, 112, 112, 64)	256	conv1_conv[0][0]

Figure 4: Model Evaluation Summary

```
48              predict_and_display_image('uploaded_image.jpg', model_eff)
49
50  # Attach the function to the upload button
51  upload_btn.observe(on_upload_change, names='value')
52
53  # Display the upload button and output widget
54  display(upload_btn, output)
55
```

Could not render content for 'application/vnd.jupyter.widget-view+json'

{"model_id":"428ebbf54e264659a871ca536e14de18","version_major":2,"version_minor":0}

Could not render content for 'application/vnd.jupyter.widget-view+json'

{"model_id":"4f7b00a88f9c4deb8036a8a75e08fa71","version_major":2,"version_minor":0}

```
---------------------------------------------------------------------------
AttributeError                      Traceback (most recent call last)
File c:\Users\pbans\OneDrive\Desktop\CD2\.conda\Lib\site-packages\ipywidgets\widgets\widget.py:773, in Widget._handle_msg(self, msg)
    771          if 'buffer_paths' in data:
    772              _put_buffers(state, data['buffer_paths'], msg['buffers'])
--> 773          self.set_state(state)
    775 # Handle a state request.
    776 elif method == 'request_state':

File c:\Users\pbans\OneDrive\Desktop\CD2\.conda\Lib\site-packages\ipywidgets\widgets\widget.py:650, in Widget.set_state(self, sync_data)
    645          self._send(msg, buffers=echo_buffers)
    647 # The order of these context managers is important. Properties must
    648 # be locked when the hold_trait_notification context manager is
    649 # released and notifications are fired.
--> 650 with self._lock_property(**sync_data), self.hold_trait_notifications():
    651      for name in sync_data:
    652          if name in self.keys:

File c:\Users\pbans\OneDrive\Desktop\CD2\.conda\Lib\contextlib.py:144, in _GeneratorContextManager.__exit__(self, typ, value, traceback)
    142 if typ is None:
    143      try:
--> 144          next(self.gen)
    145      except StopIteration:
    146          return False
...
    41          # Save the uploaded image to a temporary path
    42          with open('uploaded_image.jpg', 'wb') as f:
    43              f.write(file_info['content'])

AttributeError: 'tuple' object has no attribute 'items'
```
Output is truncated. View as a scrollable element or open in a text editor. Adjust cell output settings…

Figure 5: Exception – Progress Blocker