Cartooning of real image in python

Submitted in partial fulfilment of the requirements for the award of degree of

BACHELOR OF ENGINEERING

IN

COMPUTER SCIENCE &ENGINEERING

CHANDIGARH UNIVERSITY

Discover. Learn. Empower.

Submitted to:

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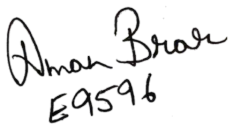
VANSHIKA (19BCS8002)

Mentor Signature (name and ecode)



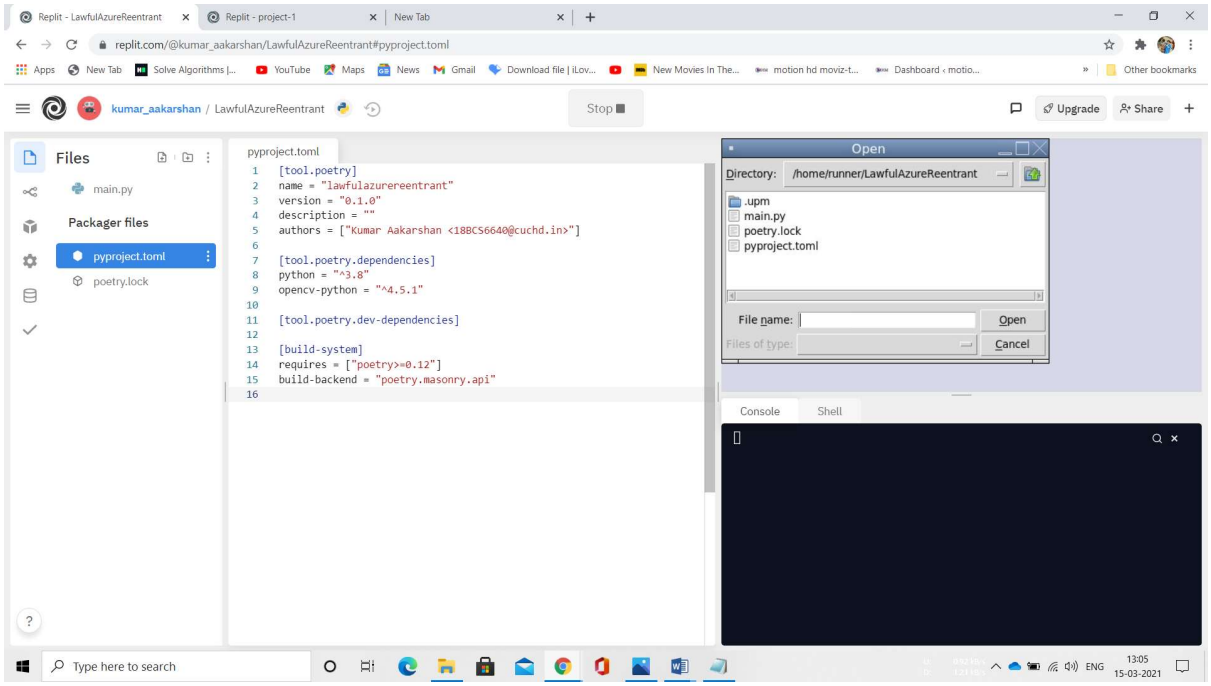
DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

Chandigarh University, Gharuan

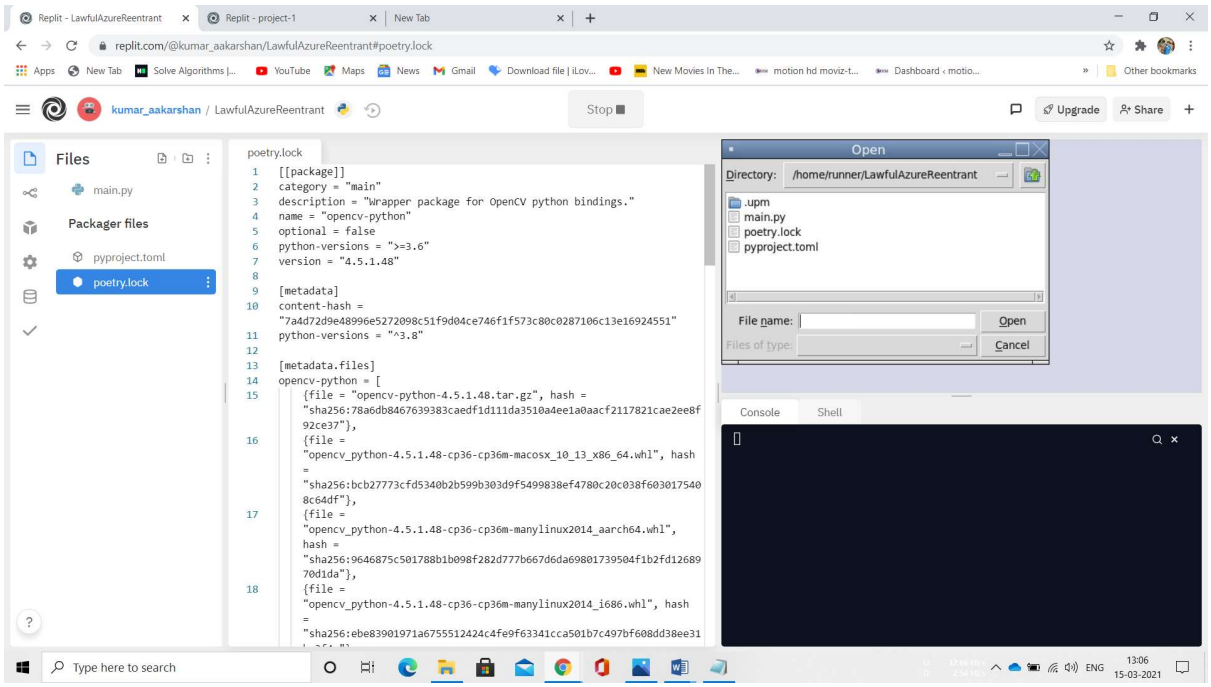
Feb 2021

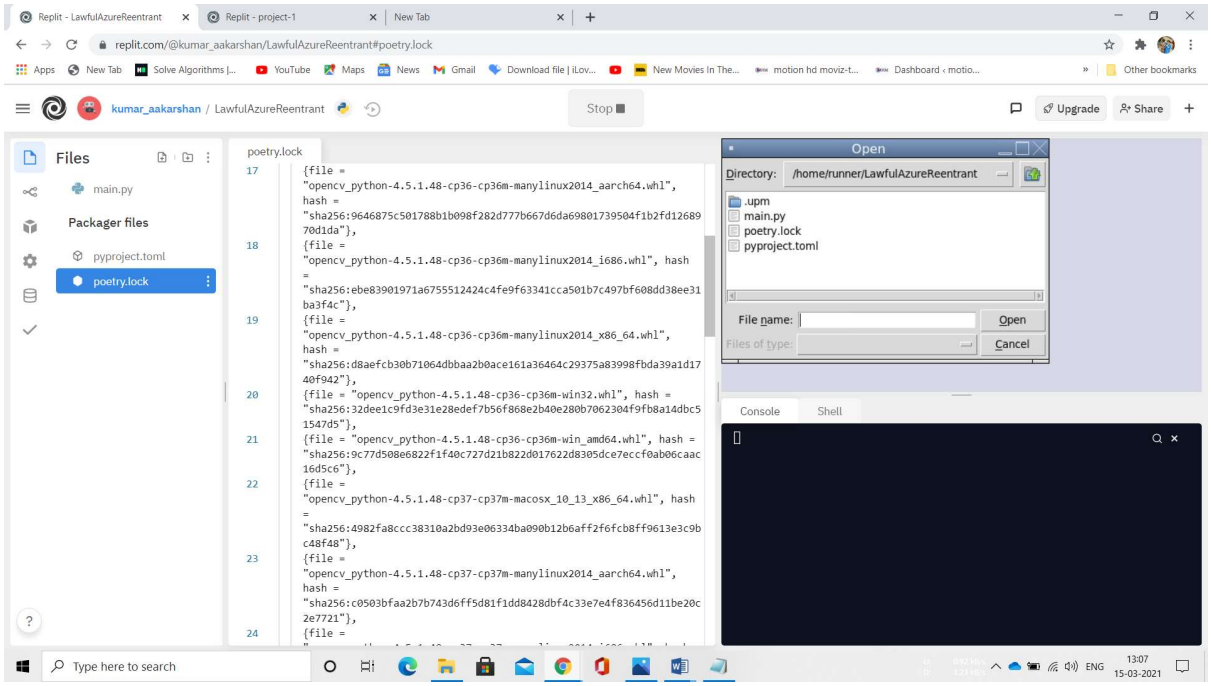
Project Design

Pyproject.toml module: contain dependencies and author information etc.



Poetry.Lock module: This module contain all the packages which need to be install such as numpy, open cv etc

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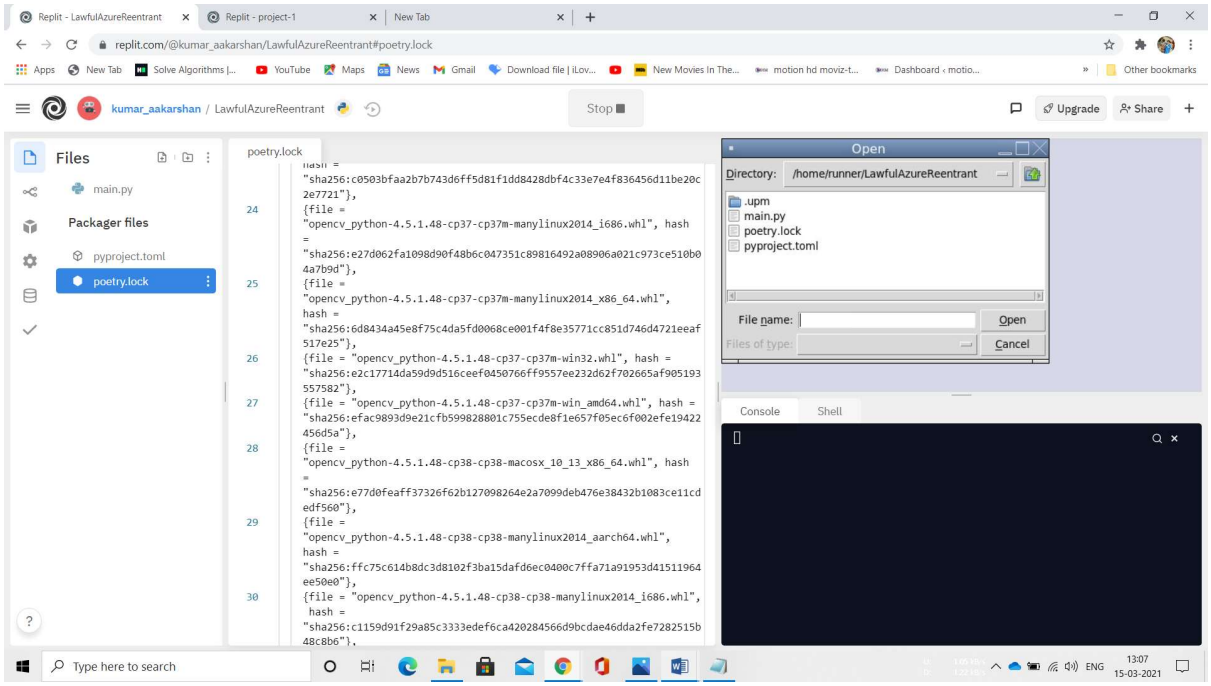
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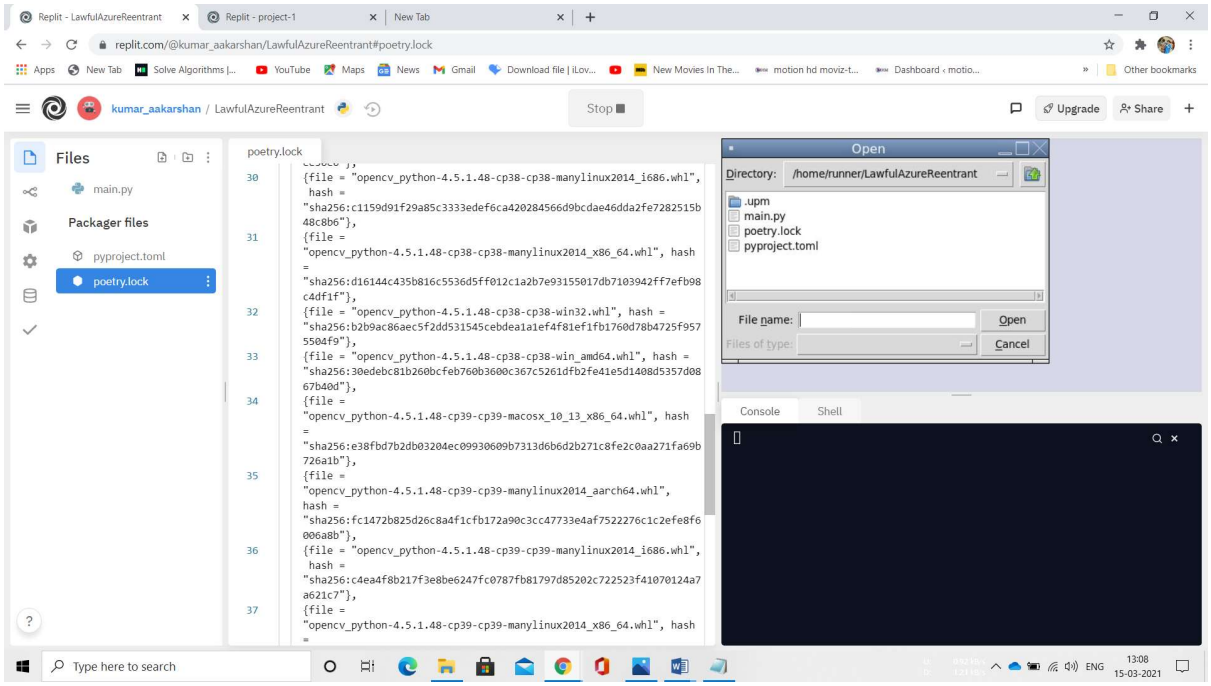
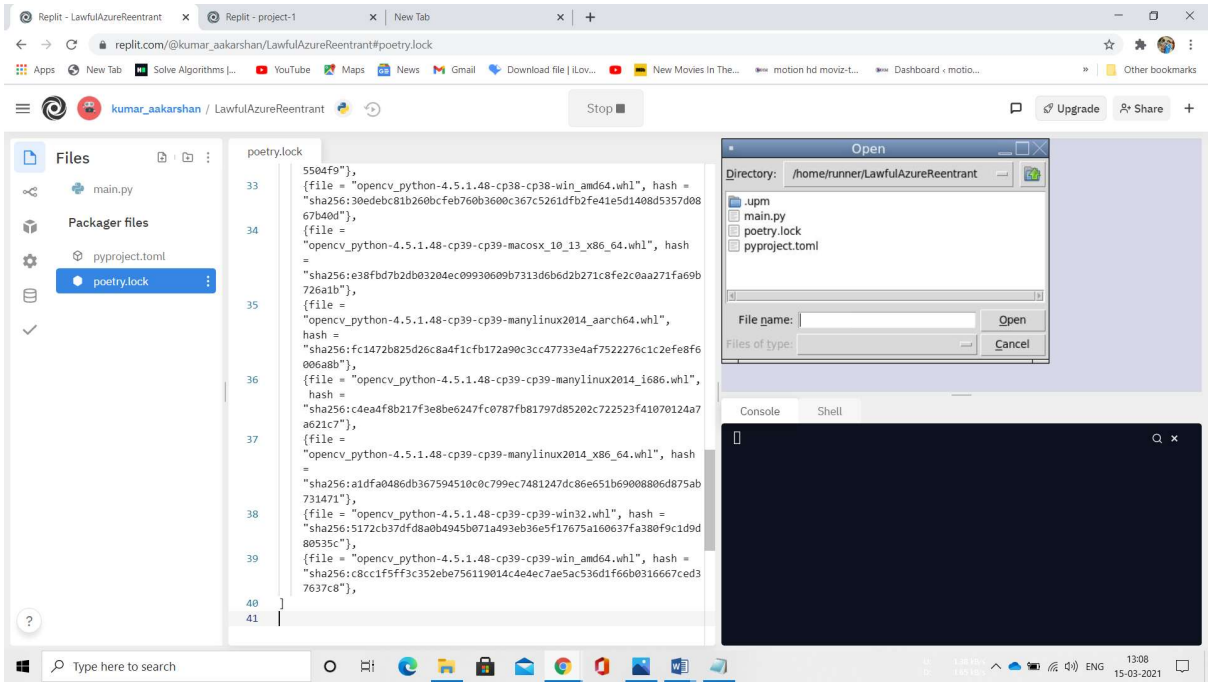




Methodology:

1. The initial step of cartooning image is to apply the bilateral filter to decrease the shading or color palette of the image, which implies first we need to downscale the image and afterward apply the bilateral filter to get an animation flavor and again we upscale the image.
2. The next step is to get a blurred image of the real image. And we just need the blurring of the limits without colors to interfere in this process. So, for this, we first convert the genuine picture to grayscale.
3. The following stage is to apply the median blur so as to diminish image noise in the grayscale image.

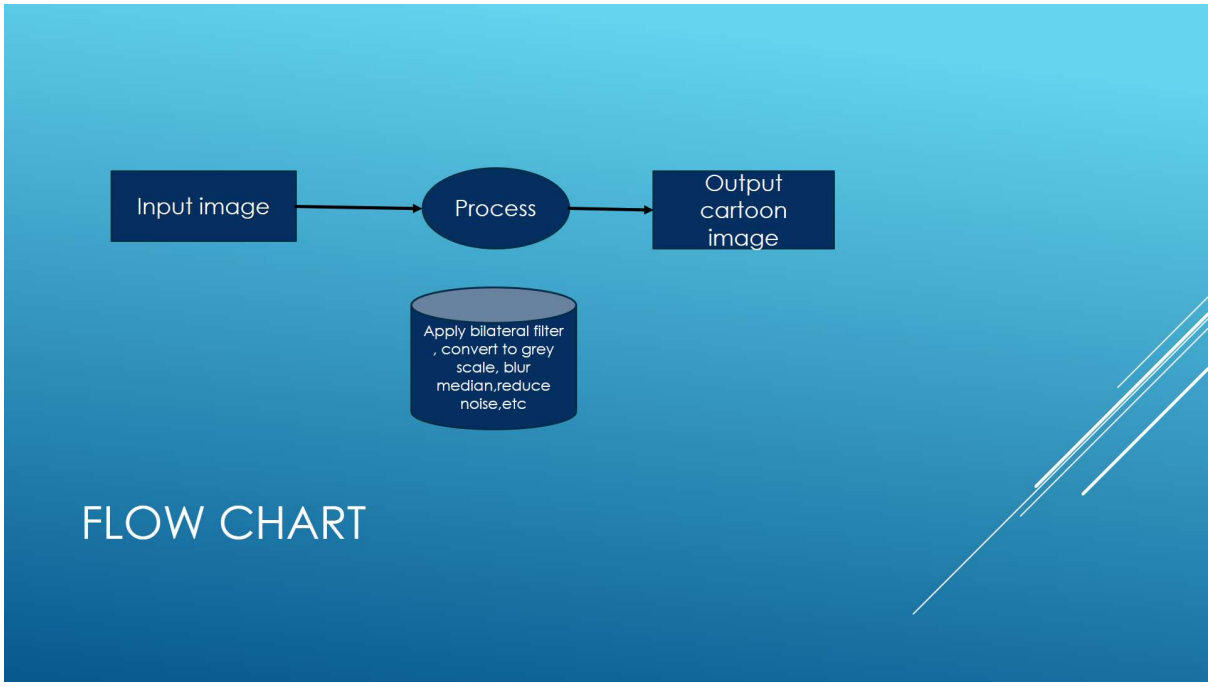
4. Next, we make an edge mask from the grayscale image utilizing an adaptive thresholding technique.
5. In the last step, we have to recognize the edges in the image and afterward add this to the recently changed pictures to get cartoonish or sketch pen impact to the picture. After this step, we finally combine the final images obtained from the previous steps.
6. Here we get our cartoonist image.

Comparison with previous module/software: this will provide a free of cost cartooning of object (i.e royalty free) which no other software provide.

Innovation in model/design/solution

Computer Vision as you know (or even if you don't) is a very powerful tool with immense possibilities. So, when I set up to prepare a comic of one of my friend's college life, I soon realized that I needed something that would reduce my efforts of actually painting it but will retain the quality

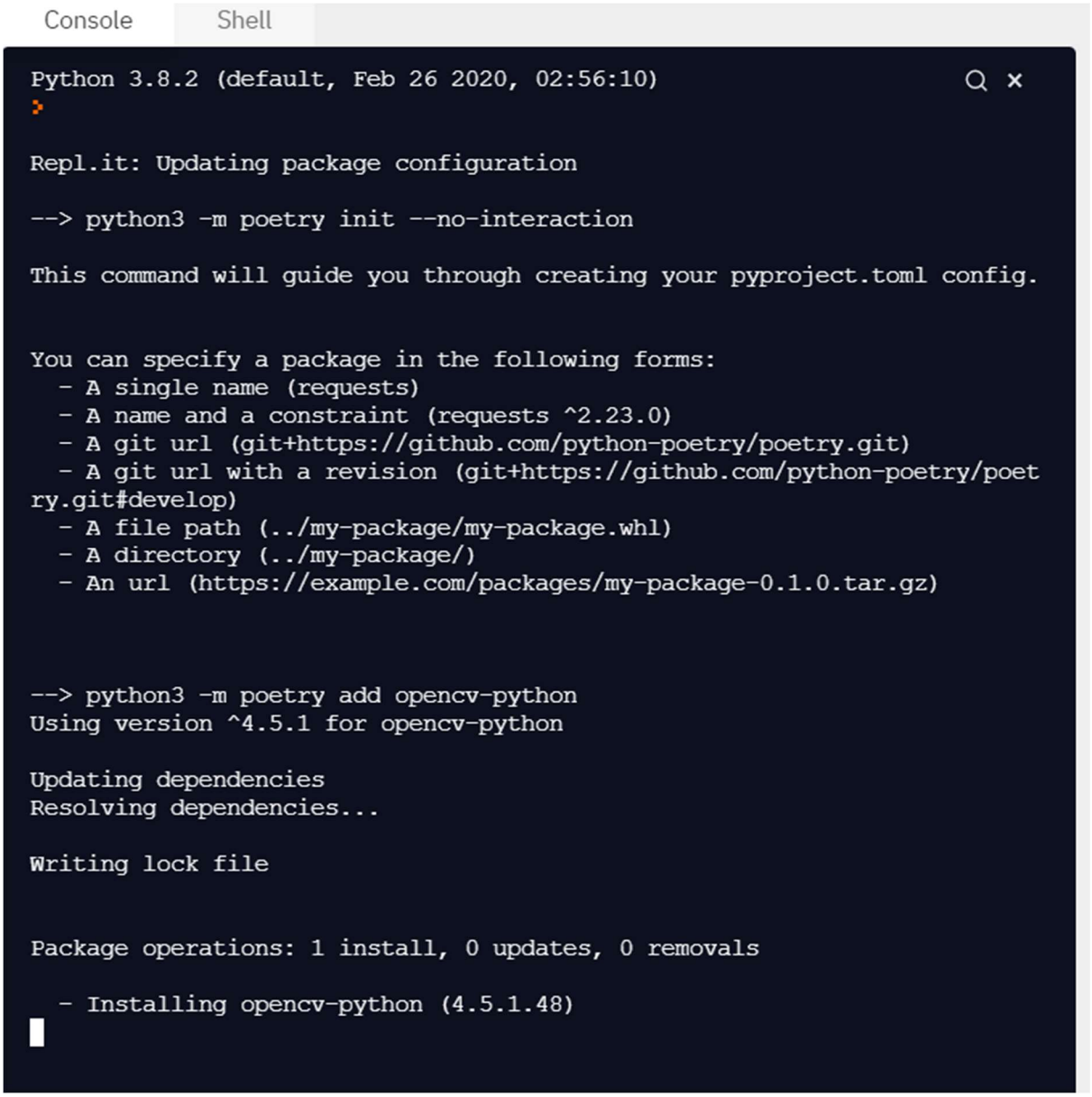
In the past few years, image cartomizer-software has been used for converting the normal image into a cartoon image. In this process, edge detection and bilateral filter are required. The bilateral filter is used to reduce the color palette of an image. Afterward, we can apply edge detection to this image for generating a dark shaped image. Therefore, finally, some tricks can apply for this image to get a cartoon image.



Implementation (at least 40%)

Installing module required:

```
Repl.it: Updating package configuration

--> python3 -m poetry init --no-interaction

This command will guide you through creating your pyproject.toml config.


You can specify a package in the following forms:
  - A single name (requests)
  - A name and a constraint (requests ^2.23.0)
  - A git url (git+https://github.com/python-poetry/poetry.git)
  - A git url with a revision (git+https://github.com/python-poetry/poet
ry.git#develop)
  - A file path (../my-package/my-package.whl)
  - A directory (../my-package/)
  - An url (https://example.com/packages/my-package-0.1.0.tar.gz)



--> python3 -m poetry add opencv-python
Using version ^4.5.1 for opencv-python

Updating dependencies
Resolving dependencies...
```


Console
Shell
Python 3.8.2 (default, Feb 26 2020, 02:56:10)
Repl.it: Updating package configuration
--> python3 -m poetry init --no-interaction
This command will guide you through creating your pyproject.toml config.
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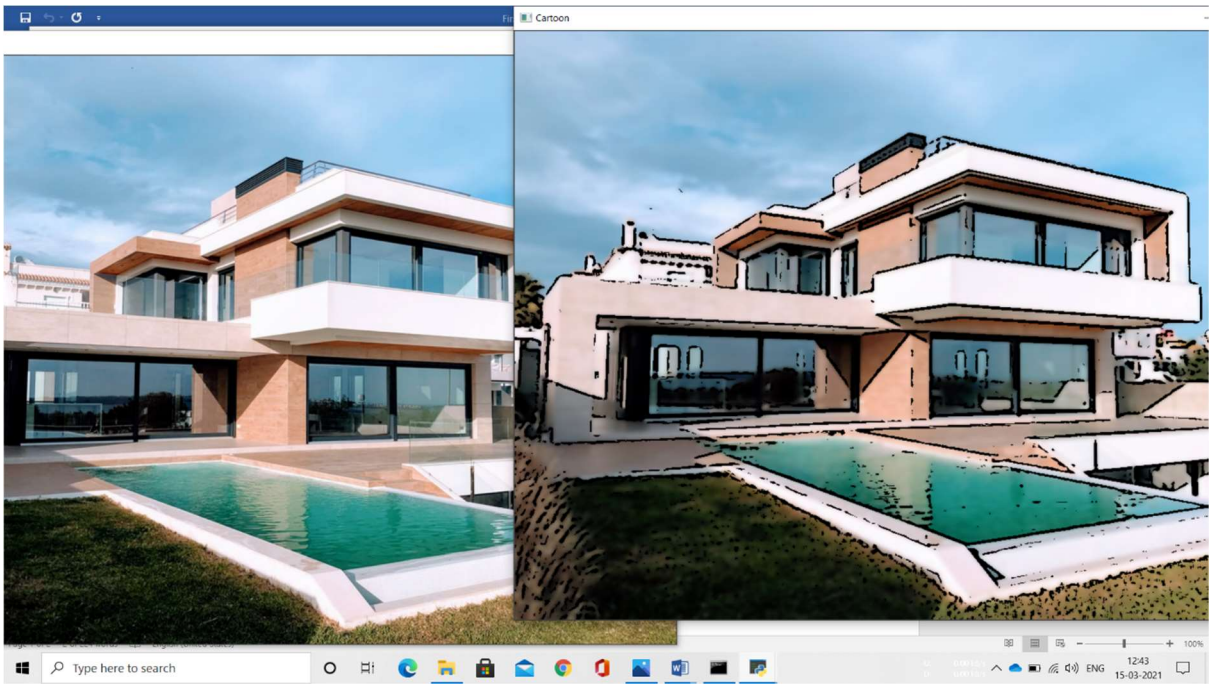
- A git url with a revision (git+https://github.com/python-poetry/poetry.git#develop)
- A file path (../my-package/my-package.whl)
- A directory (../my-package/)
- An url (https://example.com/packages/my-package-0.1.0.tar.gz)
--> python3 -m poetry add opencv-python
Using version ^4.5.1 for opencv-python
Updating dependencies
Resolving dependencies...
Writing lock file
Package operations: 1 install, 0 updates, 0 removals
- Installing opencv-python (4.5.1.48)

Output:



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https://github.com/