All the code is based on Python using Jupyter Notebook.

Steps followed to run the code.

1. Open the anaconda command line and create a virtual environment with the below command:
   conda create -n cs688 python = 3.7

```
(base) C:\Users\johns>conda create -n cs688 python=3.7
Retrieving notices: ...working... done
Channels:
 - defaults
Platform: win-64
Collecting package metadata (repodata.json): done
Solving environment: done
```

2. Activate the cs688.

```
(base) C:\Users\johns>conda activate cs688
```

3. Open the Jupyter Notebook by the below command.

```
(cs688) C:\Users\johns>jupyter notebook
```

4. Installed the below packages in the cs688 virtual environment of the 'johns' folder.

   Notebook, numpy, matplotlib, scipy, scikit-image, ortools, opencv-python

5. Now run the Jupyter Notebook command as below.

```
(cs688) C:\Users\johns>jupyter notebook
```

6. Notebook will be open in the browser. Run the Python code in the .ipynb file to replicate the results in the report.