ML Assignment:-

1. Study Various loss functions to be used for multi class classification tasks for highly imbalanced class label data. For eg- focal loss, weighted loss. Implement any one loss function in code.(Avoid using library functions).

2. Implement a real-time object tracking module, incorporate live video feed as an input, and find ways to assess the accuracy in such a task.

3. Read about suitable evaluation metrics in Object detection, segmentation tasks.(MAP is one of the robust metric in detection tasks)

4. Read about the following topics:--- Batch Normalisation,Layer Normalisation, Dropout layers for regularisation, activation functions(you may be even come across some surprising facts like softmax can even be used even for binary classification), Pooling layer, use of 1-D convolutions, advantages of Skip connections.

   Once you have gone through these topics, implement a simple CNN architecture for some classification or detection task.(You may use tensorflow, keras,pytorch)

5. Read about one stage and two stage object detection methods, you may come across several implementations such as R-CNN, Retina Net, just read in brief about them. Stress more upon when we could use these and the problems associated with them and what problems they solve. (Go through topics like bounding box regression, ROI Alignment)

6. Suggest some ways for object detection tasks under different lighting conditions.(dim, bright). As you know the rover in most of the cases has to recognise objects in low light conditions.