**Landslide Mapping of Rudraprayag Region using Machine Learning**

DATA USED:

|  |  |  |  |
| --- | --- | --- | --- |
| **S.no** | **Data** | **Format** | **Source(portal)** |
| 1. | Resourcesat (LIS III) | Raster | Bhuvan |
| 2. | CartoDEM version3R1 | Raster | Bhuvan |
| 3. | Landslide Inventory | Vector | Bhukosh |

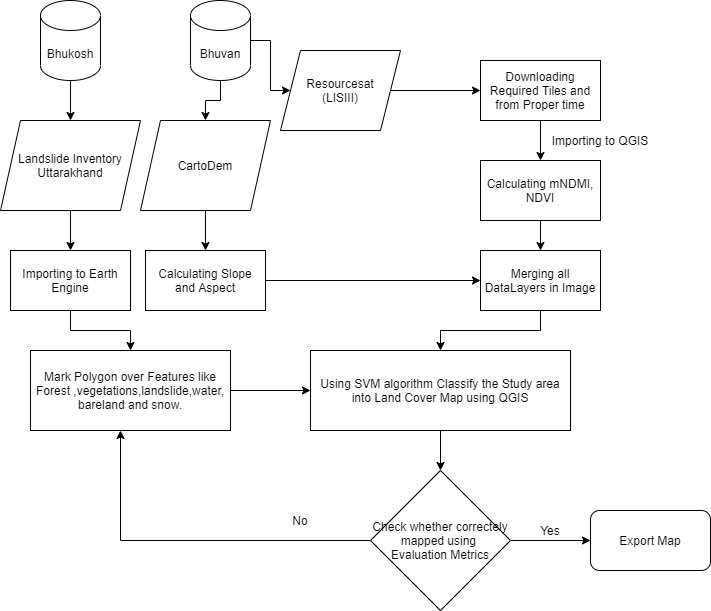
METHODOLOGY:

STEP 1: Downloading the Required tiles of CartoDem and Resoucesat (LIS III) from the Bhuvan portal and Uttarakhand landslide inventory from the Bhukosh portal.

STEP 2: Importing DEM tiles to QGIS and calculating Slope and Aspect, Using LIS III band data calculating NDVI(Band3 and Band4)and mNDMI(Band 4 and Band 5). Merging all the newly formed layers along with the previous one in one data layer.

STEP 3: For Data annotation Using Earth engine to mark polygon over required Landcover like Landslide, Forest, Snow, Water, and Bare land. And using those entries as the class for training of the dataset. A landslide can find out Using landslide inventory downloaded from Bhukosh Portal.

STEP 4: Using SVM Machine Learning Algorithm for the classification study area.

STEP 5: Check for the Land Cover Map to be more accurate and precise and check using evaluation metrics. If an error is high then Increase the number of training data to increase accuracy and repeat from step 3.

APPLICATIONS: This map can help to find out the landslide area without manual surveying which is a very slow and inefficient process along with the intensity of landslide and its effects. And if more data is added along with the usage of better algorithms it can use to detect landslides as soon as remote sensing satellites cover that area which can update landslide inventory within a few- days.