

Topic 14

1. **Title:** Feature Extraction from RS-HR data using AIML
Ex– Farm Pond, Check Dam, Nala Pond, Dug wells, High Tension tower, windmill, electric substation, sewage treatment plant, warehouse.
2. **Description:** The features Farm Pond, Check Dam, Nala Pond, Dug wells, High Tension tower, windmill, electric substation, sewage treatment plant, warehouse require high resolution datasets. On the fly feature extraction and display the features detected by the model. Since more than a single feature is possible in a scene, model the problem as a multi-label feature extraction.
3. **Objectives:**
 - a. Generate a dataset with class-wise labels, different features being different classes here.
 - b. Develop a multi-label classification model that takes in the satellite imagery and gives bounding boxes and/or masks for each of the detected features with confidence.
4. **Expected Outcomes:**
 - a. Labelled datasets for multiple features.
 - b. Multi-label classification model with good generalization capability.
5. **Relevant data and steps to get the data from Bhuvan/ other sources:** Use any high resolution satellite data from Bhuvan portal or any other open-source resources.
6. **Steps to be followed for achieving the objectives:**
 - a. Collect relevant satellite data.
 - b. Generate labels (collect labels as well if available) manually.
 - c. Train the classification models
7. **Evaluation:**
 - a. Object Detection metric Intersection over Union (IoU).
 - b. Weightage shall be given to the number of classes the model can detect.
 - c. Mean Average Precision (MAP), micro and macro F1 scores.