. **OOP Essential**

**LAB # 03**

** Fall 2019**

**Fall 2021**

**CSE208L Object oriented programming**

Submitted by: **Ashfaq Ahmad**

Registration No. : **19PWCSE1795**

Class Section: **B**

“On my honor, as student of University of Engineering and Technology, I have neither given nor received unauthorized assistance on this academic work.”

Student Signature: \_\_\_\_\_\_\_\_\_\_\_\_\_\_

Submitted to:

**Engr. Sumayyea salahuddin**

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**Department of Computer Systems Engineering**

**University of Engineering and Technology, Peshawar**

**3.3.2 Activity**

Make a group consisting of 2‐3 students and submit OOP Lab Project Proposal including Group Members (Names and Registration Numbers)

* We make a group of three people for final project. Their names and registration numbers are given,

**Name**  **Registration number**

1. **Ashfaq Ahmad 19PWCSE1795**
2. **Osama khan marwat 19PWCSE1777**
3. **Ataullah khan 19PWCSE1746**

**3.3.3 Activity**

To inculcate the knowledge of the state‐of‐the‐art problems and initiate critical thinking process to solve

them, each student is provided with a unique research paper. Following should be submitted:

* Brief 1‐page summary of the provided research paper in your own words
* Perform online search and find another paper similar/related to provided paper and summarize it too
* Compare both papers in one paragraph and state which idea is better and  why?

**Near-real time forest change detection using planetscope imagery:**

**Summary:**

In this research we studied about planetscope imagery which is used for Near-real time forest change detection. With 120 satellites currently in orbit, the always-on planetscope constellation make up history’s largest commercial fleet of satellites , collecting daily 3-5 meter resolution imagery of earth entire landmass. This sensor captures four different multispectral bands, being red, green, blue and near-infrared. The 3-5 meter resolution is enough to analyze and track changes in vegetation and forest cover, flood activity and large construction project.

We present a new Thresholding Rewards and Penances TRP algorithm using Planetscope imagery for near-real time forest change detection. By means of a reinforcement learning concept, TRP outputs updated forest change maps in near-real time, i.e. each time a new Planetscope image is acquired. It produces a new forest change map as soon as a new Planetscope image is acquired. To combat global deforestation, monitoring forest disturbances at sub-annual scales is a key challenge. For this purpose, the new Planetscope nano-satellite constellation is a game changer, with a revisit time of 1 day and a pixel size of 3-m.

We studied in research paper that TRP is tested in five randomly selected study areas in Tuscany, Italy. All forests were coppices harvested by clearcuts. One study area was used to develop and calibrate TRP and the remaining study areas were used as never-seen-before data to validate the algorithm with respect to both map accuracy and the precision of estimates of areas of change. A limitation of many remote sensing algorithms is that the output products cannot be obtained immediately at the end of the study year

To calibrate and validate TRP, a reference set was constructed as a complete census of five randomly selected study areas in Tuscany, Italy.

TRP was used to construct forest change maps during the study period for which the final user’s accuracy was 86% and the final producer’s accuracy was 92%. In addition, we estimated the forest change area using an unbiased stratified estimator that can be used with a small sample of reference data. The 95% confidence interval for the sample-based estimate of 56.89 ha included the census-based area estimate of 56.19 ha.

In last, automated methods based on active or passive sensors that can accurately predict forest change in near-real time over large heterogeneous landscapes still suffer from multiple shortcomings.

**Comparison:**

We compared planetscope imagery with landsat 8 and sentinel-2, but the planet scope resolution is better one because the highest prediction accuracy was obtained by planetscope imagery at 3 m (relative root mean squared error: 51.3%) and sentinel-2 multi-seasonal composite at the other spatial resolution(40.5%, 35.2% and 34.4% for 10, 20, and 30m, respectively ).

Planetscope imagery is recommended for canopy height mapping at finer spatial resolution.