Team - ECO_Minions

Name —---------- Signature

Title: Satellite-Based Environmental Monitoring for Sustainable Well-being

Abstract: The proposed project aims to utilize satellite imagery to monitor environmental changes and assess their impact on well-being. By comparing historical and recent satellite images, the project will analyze changes in green cover, water bodies, and air quality. Key components include the use of the Normalized Difference Vegetation Index (NDVI) for vegetation analysis, the Normalized Difference Water Index (NDWI) for water body detection, and Aerosol Optical Depth (AOD) for air quality estimation. Statistical analysis and predictive modeling will be employed to determine the thresholds of green cover, water bodies, and air quality necessary to maintain a healthy environment. An interactive dashboard and automated reporting system will be developed to visualize and disseminate the findings. This project will provide valuable insights for urban planning, environmental conservation, and public health initiatives, promoting sustainable development and enhancing overall well-being.

Key Points:

1. **Satellite Imagery Analysis**: Acquire and preprocess satellite images to ensure consistency in comparisons.
2. **Greenery Analysis**: Calculate NDVI to monitor changes in vegetation health and cover.
3. **Water Body Analysis**: Use NDWI to detect and measure changes in water bodies.
4. **Air Quality Estimation**: Estimate air quality through satellite-derived AOD and integrate with ground-based data.
5. **Statistical Analysis and Modeling**: Analyze trends, predict future changes, and establish environmental thresholds.
6. **User Interface and Visualization**: Develop an interactive dashboard and automated reports for data visualization and dissemination.
7. **Applications**: Provide actionable insights for urban planning, environmental conservation, and public health.