App Proposal

1. Objective

DeforesTrack is a revolutionary app for phones and computers that tracks and maps global deforestation in real time. DeforesTrack considerably empowers governments, NGOs, researchers, environmentalists and the public to combat deforestation and its deeply negative effect on climate change and biodiversity through the utilization of advanced satellite imagery, advanced artificial intelligence and strong community participation.

The app analyzes changes in forest cover to create interactive deforestation maps and predict future deforestation trends using real-time satellite data. Stakeholders gain a thorough comprehension of forest conditions, enabling better conservation choices and faster responses to deforestation alerts.

Primary Goals:

* Real-time monitoring delivers consistently precise, current deforestation data to users worldwide, for this provides up-to-date information globally.
* Important support for policy makers: Equip five key government bodies and twenty important NGOs with thorough data to effectively shape policies and actions.
* Meaningful community involvement in combating deforestation will be achieved by providing the public with thorough reporting tools and large educational resources.

2. Key SDG’s Targeted

Several key Sustainable Development Goals were targeted, representing important areas for improvement. Deforestation is a meaningful contributor to greenhouse gas emissions.

SDG 13: Climate Action

Deforestation plays a significant role in increasing greenhouse gas emissions. By identifying deforestation at an early stage and offering predictive insights, DeforestTrack actively supports global climate action. It helps raise awareness and promotes policy changes aimed at lowering carbon emissions.

SDG 15: Life on Land

Forests are complex ecosystems that are home to numerous species, they help in the storage of water and carbon are known to be major influences in the water cycle. Besides, the program is decentralized and ensures that natural habitats are under no threat, thus, brings human-induced habitat loss and inter alia protection of the biodiversity.

SDG 16: Peace, Justice, and Strong Institutions

This app, which has a remarkable feature of crowd sourcing the reporting process, helps people who live in the area and environmental groups to get aware of the places where illegal actions take place. Moreover, it promotes the updating and application of rules and regulations that are meant to combat environmental degradation.

3. Key Features

- AI-Powered Satellite Monitoring

Satellite Data: Employs the use of robust sources like Google Earth Engine, NASA MODIS, and Sentinel-2 to monitor forests at a global scale.

AI Image Processing: The AI-driven algorithms automatically trace the pattern of deforestation and changes in forest cover from satellite images for real-time data analysis.

* Interactive Deforestation Map

Global Coverage: The map provides heatmaps across the world where rapid deforestation is evident, therefore allowing zooming into specific regions.

Local & Global View: With options to observe trends in their local area or on a global scale, including historical views to show changes over time.

* Deforestation Alerts

Real-Time Notifications: Users will be allowed to set up alerts for specific regions, receiving immediate notifications when new deforestation is detected in those areas.

Custom Alerts: These notifications can be customized based on the severity or rate of deforestation.

* Reforestation & Conservation Tracking

Monitoring Conservation: By highlighting where tree-planting projects or conservation programs are in place, the app supports sustainable projects.

Partnership with NGOs: DeforestTrack teams up with NGOs to track forest recovery efforts, and it integrates data from worldwide conservation efforts to present the bigger picture of forest health.

* Crowdsourced Reports

User-Generated Data: Photos with geotagged reports of illegal logging, fires, or land clearance can be submitted by anyone.

Community Validation: AI analytics coupled with peer review validate these reports for data accuracy and reliability.

* Predictive Analytics

AI Models: Through machine learning models, using previous satellite data, the model identifies where future hotspots of deforestation are likely to be. This, therefore, informs proactive intervention.

Risk Assessment Tools: These predictions inform organizations where specifically to prioritize conservation based on projected areas at high risk of imminent deforestation.

4. Technical Architecture

<https://miro.com/app/board/uXjVLliMT_w=/?share_link_id=311054610614>

5. Research and Evidence

Deforestation & Climate Change Impact

* Deforestation plays a significant role in climate change by releasing carbon dioxide stored in trees. The UN reports that nearly 20% of global emissions come from land-use changes like deforestation.
* Reference: [IPCC Climate Change Report](https://www.ipcc.ch/)

Satellite Monitoring & Forest Data

* The use of satellite imagery for tracking deforestation has become increasingly accurate and widespread. Satellites provide a comprehensive, non-invasive method for monitoring large areas that may otherwise be difficult to assess on the ground.
* Reference: [Google Earth Engine](https://earthengine.google.com/)

Global Forest Watch (Benchmarking)

* Global Forest Watch provides a detailed, publicly available database on global deforestation trends. Their work serves as an excellent benchmark for the real-time data and maps provided by the DeforestTrack app.
* Reference: [Global Forest Watch](https://www.globalforestwatch.org/)