

FOREST TRACKER

**GROUP NAME : HUMMING
BIRD SENTINEL**

**Track I : Track I —
Localized Forest
Watch & Monitoring**

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*AI Powered monitoring systems coupled with data to
protect and ensure conservation*



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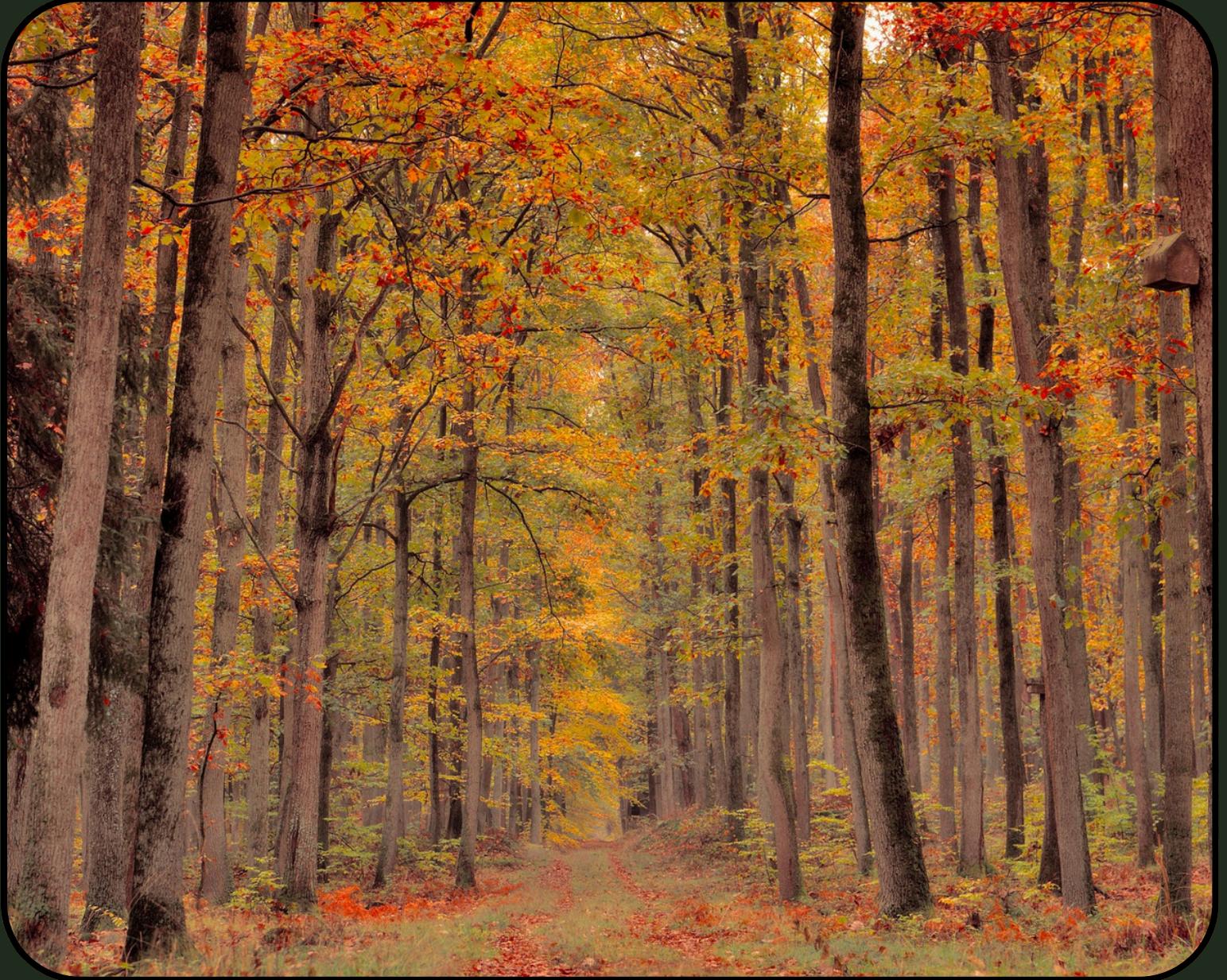


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Problem statement



Real-time satellite-driven forest monitoring to detect degradation early and support timely conservation action.

Objectives



1. **Real-Time Forest Monitoring** - Detect early degradation
2. **Forest health monitoring and EPI scoring** - ecosystem performance and forest vitality for accurate monitoring
3. **AI-driven policy intelligence** - forest-specific conservation recommendations.
4. **Community-Driven Protection** - whistleblower reports on forest disturbance through human methods.

Proposed solution

Current challenge

Limited real-time detection of forest degradation for community forests in semi-arid areas.

- Sentinel-1 radar to monitor semi-arid community forests continuously using Makueni county as pilot.
- Combines Average Forest Health + Environmental Performance Index + Alert Frequency for clear ecosystem scoring.
- Performance tracking of community forests against national-level Environmental Performance Index.
- Anonymous reporting for ground-level validation.
- AI policy engine that converts KPIs into targeted, community-aligned conservation actions.

Architecture

Satellite data (Sentinel-1) → RFDI, Health & EPI computation → Alerts & trends → AI policy engine → Community dashboard + Admin panel.

Core MVP Features

Real-time RFDI degradation detection

Forest Health & Environmental Performance Index scoring

Alert frequency tracking

Anonymous community reporting

AI-generated policy recommendations

Tools

Dataset: Sentinel-1 SAR (VV, VH)

Analysis Models: RFDI, VV/VH ratio, RVI, EPI scoring

AI Tools: Gemini API for policy evaluation

Backend: Flask API

Frontend: Express/React

Impact & scalability

Expected Impact

- Supports early detection of forest degradation using NDVI trends.
- Helps communities and counties act faster to prevent deforestation and soil loss.
- Strengthens climate resilience by protecting water towers and biodiversity.
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Implementation Plan

- Pilot in Makueni County using local sentinel satellite RFDI data.
- Integrate alerts with county environment teams for monthly reporting.
- Dashboards for tracking forest health and sending notifications.

Scalability

- Model easily scales nationwide by updating latitude & longitude bounds.
- Can integrate additional data from Global forest watch to enhance policy making.



Thank You

**Join us in empowering communities for
conservation**