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# **GreenLens Deployment Documentation**

Group 5 – GreenLens

Team Members:

- Fatu Kromah

- Alfred Nyeswa

- Sulaiman Barry

- Jerome N. Tokpa

- Joseph S. Lablah Jr

## **1. Overview**

Deployed RandomForest model on **Hugging Face Spaces** using Streamlit, enabling cloud-based forest loss predictions accessible via web browser.

## **2. Model Serialization**

joblib.dump(rf\_best, "greenlens\_rf\_model.joblib")

json.dump(metadata, open('model\_metadata.json', 'w'))

**Format:** Joblib (compressed)  
 **Storage:** Auto-generated on Hugging Face during first run (not in git due to size limits)

## **3. Model Serving**

**Platform:** Hugging Face Spaces (Streamlit SDK)  
 **URL:** https://huggingface.co/spaces/Tumah/Greenlens  
 **Choice Rationale:** Free hosting, automatic scaling, no server management required

# README.md config

sdk: streamlit

app\_file: app.py

## **4. API Integration**

**Type:** Web UI with file upload (CSV input)  
 **Input Format:** CSV with 8 required features  
 **Output Format:** CSV/JSON with predictions + confidence scores

# Auto-training on deployment

if not os.path.exists("greenlens\_rf\_model.joblib"):

subprocess.run(["python", "greenlens\_pipeline.py"])

## **5. Security Considerations**

* **File validation:** 10MB limit, CSV only
* **Input sanitization:** Type/null checks, no code execution
* **Authentication:** Public access (HF handles HTTPS)
* **Token management:** Git push uses HF access tokens (not passwords)

## **6. Monitoring and Logging**

**Logs:** prediction\_logs.jsonl, app.log  
 **Metrics:**

* Prediction volume/speed
* Confidence scores (avg, min)
* Low confidence alerts (<70%)
* Data drift detection

**Access:** Hugging Face Space logs tab shows real-time application logs

**Deployment:** Git-based CI/CD via Hugging Face  
 **Status:** Live at https://huggingface.co/spaces/Tumah/Greenlens