

CITREE

A TREE PLANTING ASSISTANT APP



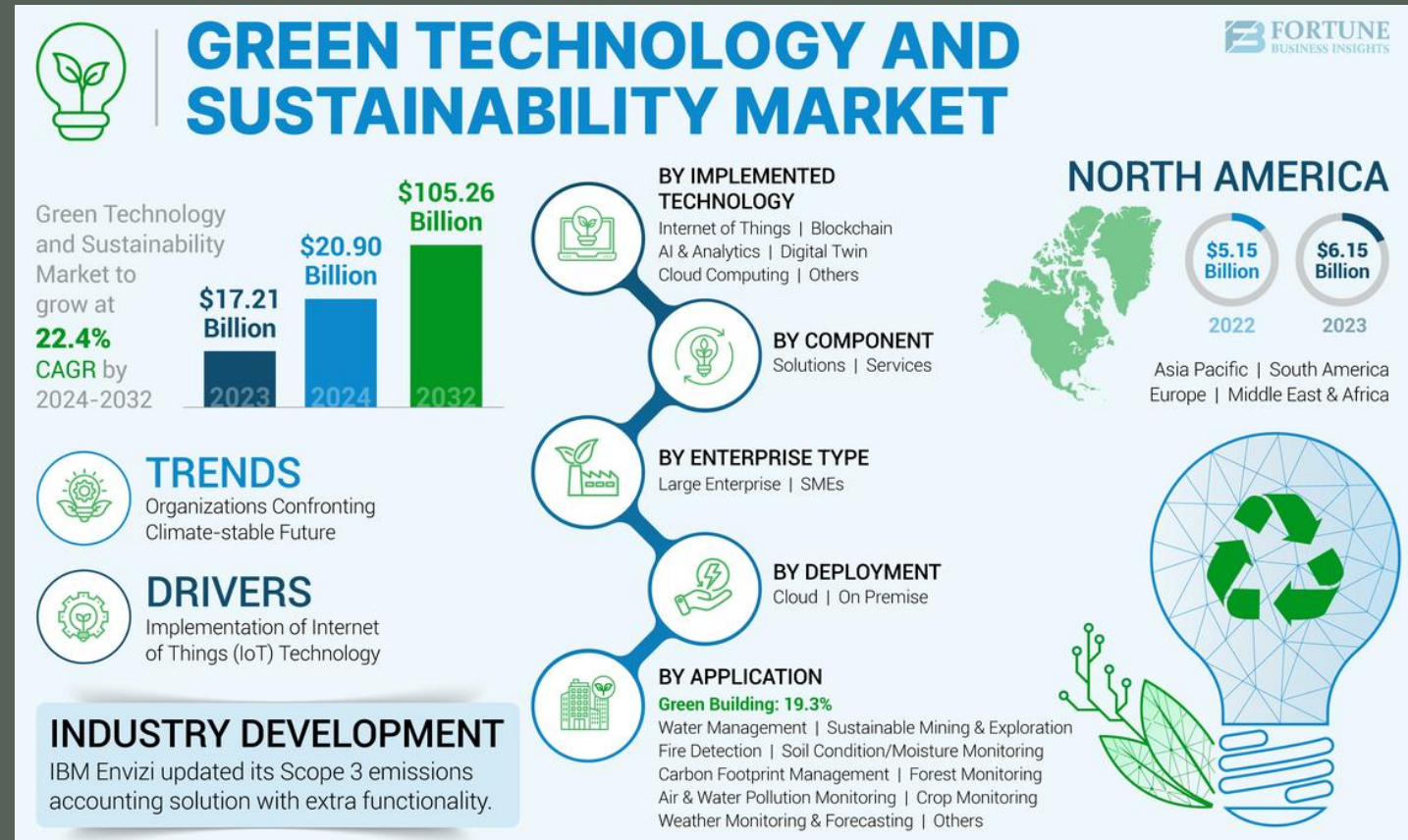
CITREE: THE BUSINESS



THE MARKET

GREEN TECHNOLOGY AND SUSTAINABILITY MARKET

Opportunities: Growing Demand for Climate Solutions & Increased Funding and Investments



ADDRESSED NEEDS



Urban Heat Island
Mitigation

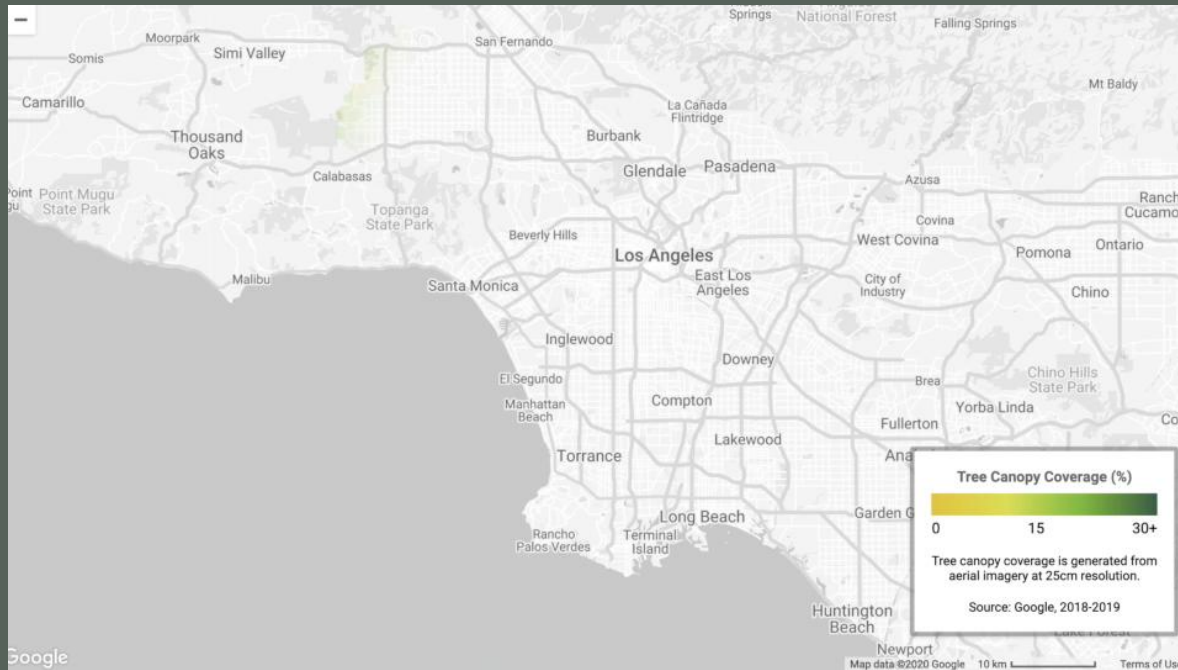
Urban Greening and
Green Space Expansion

Climate Change
Mitigation



Community Engagement
in Environmental Action

COMPETITORS



Google's Tree Canopy Lab uses satellite imagery and AI to map urban tree coverage, helping city planners identify heat islands and prioritize areas for greening initiatives.

Tech and Sustainability
Enthusiast

Community Oriented

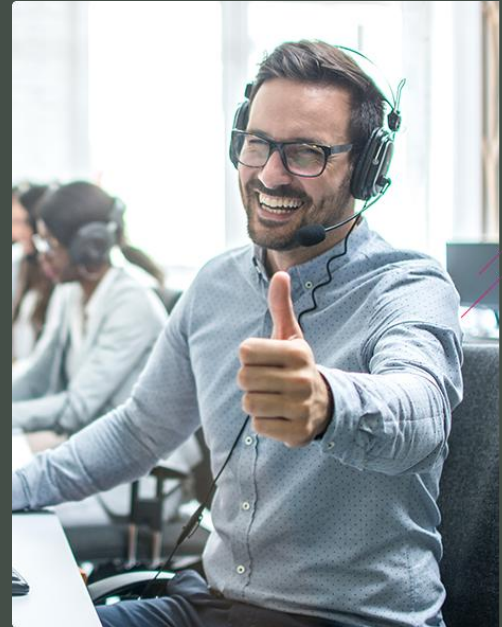
Unpleased with the lack of green spaces in
his town and the extreme heat

Needs accessible solutions for climate action
and access to a like-minded community

Wants to contribute to Urban Greening,
track personal impact and encourage
others

Uncertain about his impact

CLIENT PERSONA



OUR BUSINESS PLAN

KEY ACTIVITIES

Develop an MVP, establish a strong presence online, secure initial partnerships, launch and collect feedback

CUSTOMER RELATIONSHIPS

Periodic social media engagement about special events and partnerships via platforms like Instagram

KEY RESOURCES AND COST STRUCTURE

Large volume of satellitary data and computing power for servers and AI training. Additional costs: team pay, marketing costs

REVENUE STREAMS


Subscription based

Free Tier: Basic features such as tree tracking and limited heat island scans.

- Monthly Premium: €5
- Annual Premium: €50

OUR BUSINESS PLAN

KEY PROPOSITIONS



Empowering users
to make a change
for the better

Engaging
Community
Building



Simplifying
Environmental Action

Promoting Long-Term
Sustainability

CITREE: THE TECHNOLOGY



MAIN APP FEATURES



Urban Heat Island
Detection (Targets)

Target
Management



Planted Trees
Visualization & Impact
Tracking

TECH STACK

BACKEND



+



PyTorch



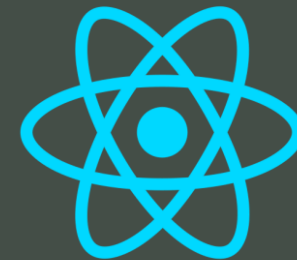
Flask

FRONTEND



ionic

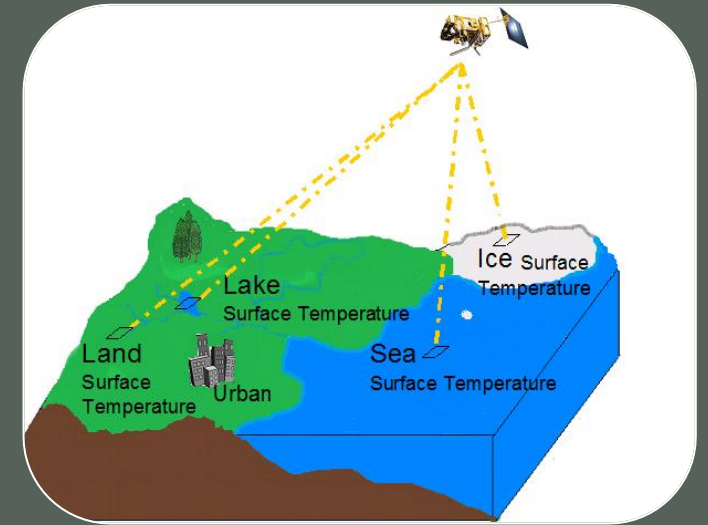
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A.I. MODEL DETAILS



WHY LAND SURFACE TEMPERATURE?



Agriculture
Better crop
management and field
health monitoring

Disaster Management
Early warning system
for potential disasters

Climate Studies
Identifying and
tracking temperature
trends

Urban Planning
Understanding heat
distribution in urban
areas

DATA REQUIREMENTS & INPUTS



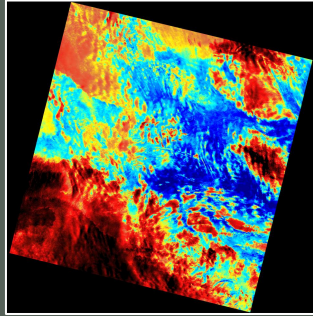
Band 4 (Red)
For surface reflectance
measurements

Band 5 (Near-Infrared)
For surface reflectance
measurements

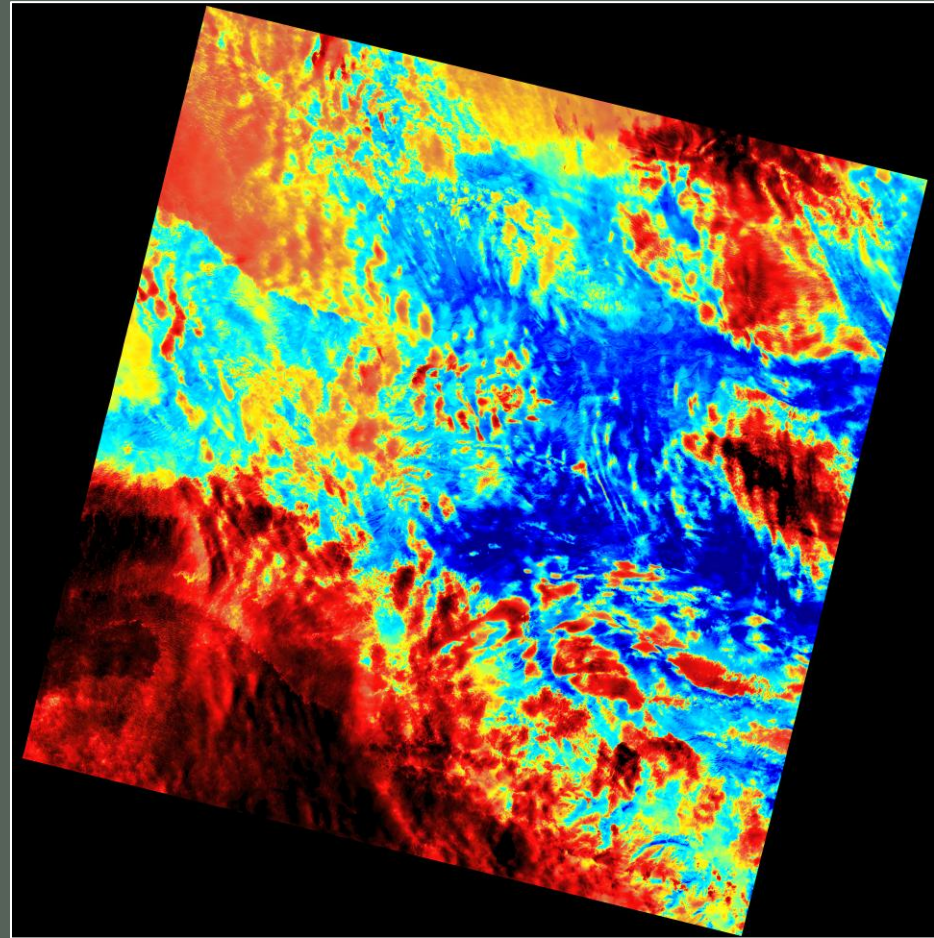
Band 10 (Thermal)
For thermal infrared
measurements

MLT.txt
Contains essential
calibration coefficients

Input data obtained from <https://earthexplorer.usgs.gov>



3x resolution



RESOLUTION INCREASE FOR
MORE ACCURATE
TEMPERATURE ESTIMATION

MODEL IMPLEMENTATION

Model Specifications

- Model size: 67 MB
- Architecture: Modified ERSGAN
- 23 RRDB blocks
- 3x resolution increase



Processing Strategy

- 512x512 pixel tiles
- 32-pixel overlap
- FP16 optimization
- Progressive processing

QUALITY METRICS

Average PSNR

33.59 Db

Average SSIM

0.9029

Average MSE

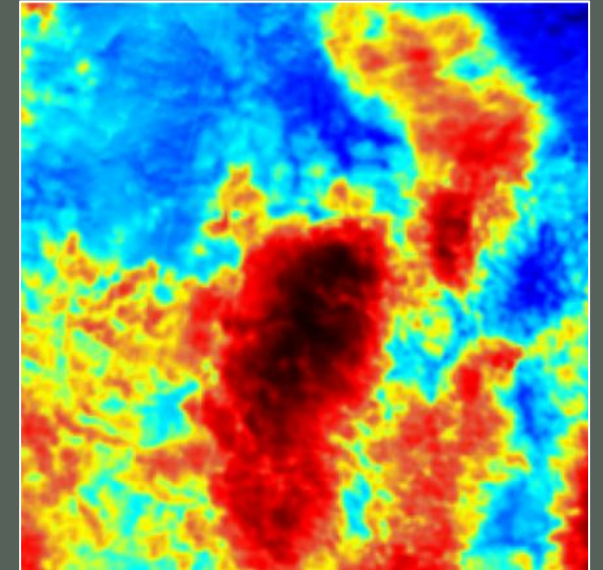
29.34



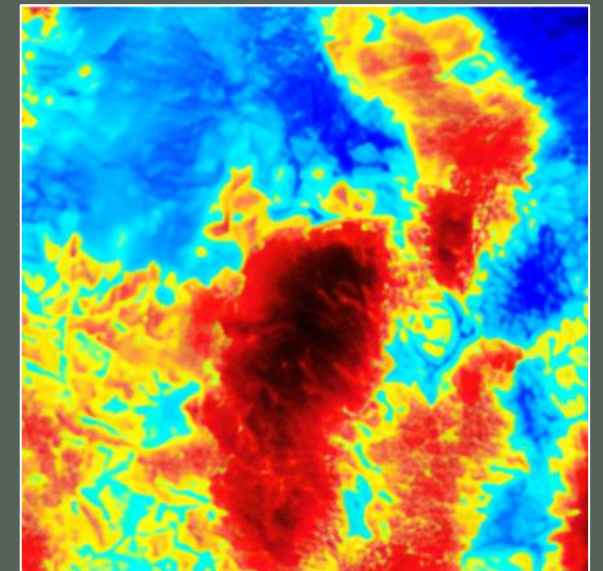
Distribution

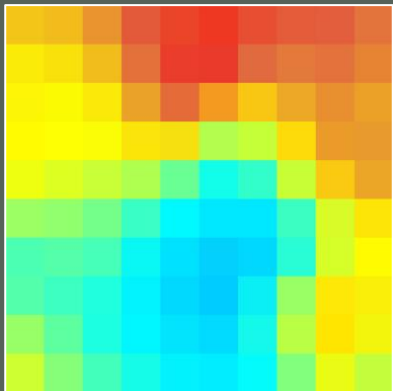
- Model size: 67 MB
- Architecture: Modified ERSGAN
- 23 RRDB blocks
- 3x resolution increase

BEFORE

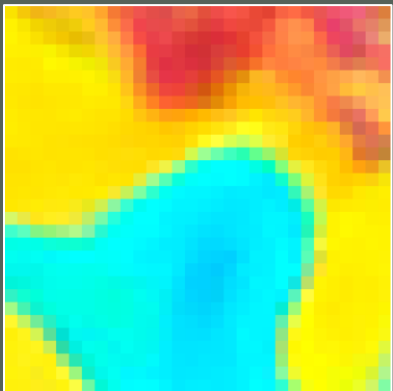


AFTER





ARITHMETIC MEAN



154	152	142	125	115	109	119	125	126	134
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FUTURE IMPROVEMENTS

1. Enhanced processing speed optimization
2. Integration of additional satellite bands
3. Real time processing capabilities
4. Advanced error correction methods

KEY ACHIEVEMENTS

1. Successful implementation of RealESRGAN
2. High structural similarity preservation
3. Efficient large-scale image processing
4. Practical agricultural applications

THANK YOU



The Team

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