

WeedTrackr

Precision weed management system

Here's what's broken

Annually, weeds cause **\$33 billion** in US crop yield losses.

Control measures add **\$6 billion**.

70 million pounds of herbicides are lost to imprecise application and overuse each year.



Most herbicides are applied as “blanket” treatments. Equal amounts are applied to ***the entire field.***

Precision equipment
exists...
but it's *expensive* and
built for annual row
crops.





In vineyards & orchards mowing is common for controlling weeds between rows. However, weeds along rows are another challenge.

How we fix that

WeedTrackr is a low-cost AI weed monitoring system designed for planning sprays in orchards and vineyards. WeedTrackr automates weed scouting and herbicide application planning, *saving \$\$\$, and mitigating environmental impacts*



Our use case

Precision Ag tools for vineyards & orchards are an emerging market.

Intensive upkeep (like regular mowing) present opportunities for automated passive weed scouting.



How it works



Step 1: Mount WeedTrackr onto your mower or tractor

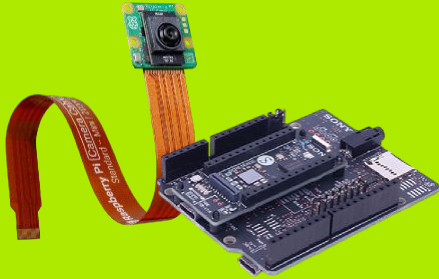
Step 2: Activate the image collection system by powering on WeedTrackr

Step 3: That's it! Continue with planned activities.

WeedTrackr will work while you do!

How it works

Detect



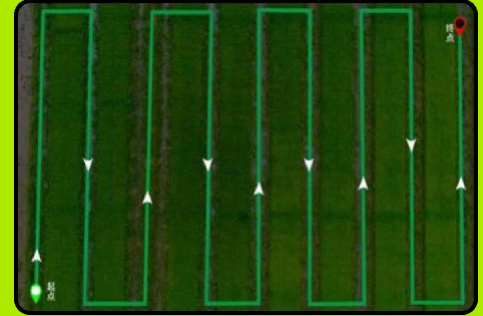
**Raspberry Pi
AI-Camera +
Spresense GPS**

Classify



**Image-data trained
ML model**

Plan



**Intelligent route
planning**

Datasets



Broadleaf



500+ Images

Grass



500+ images



soil analysis
Object Detection

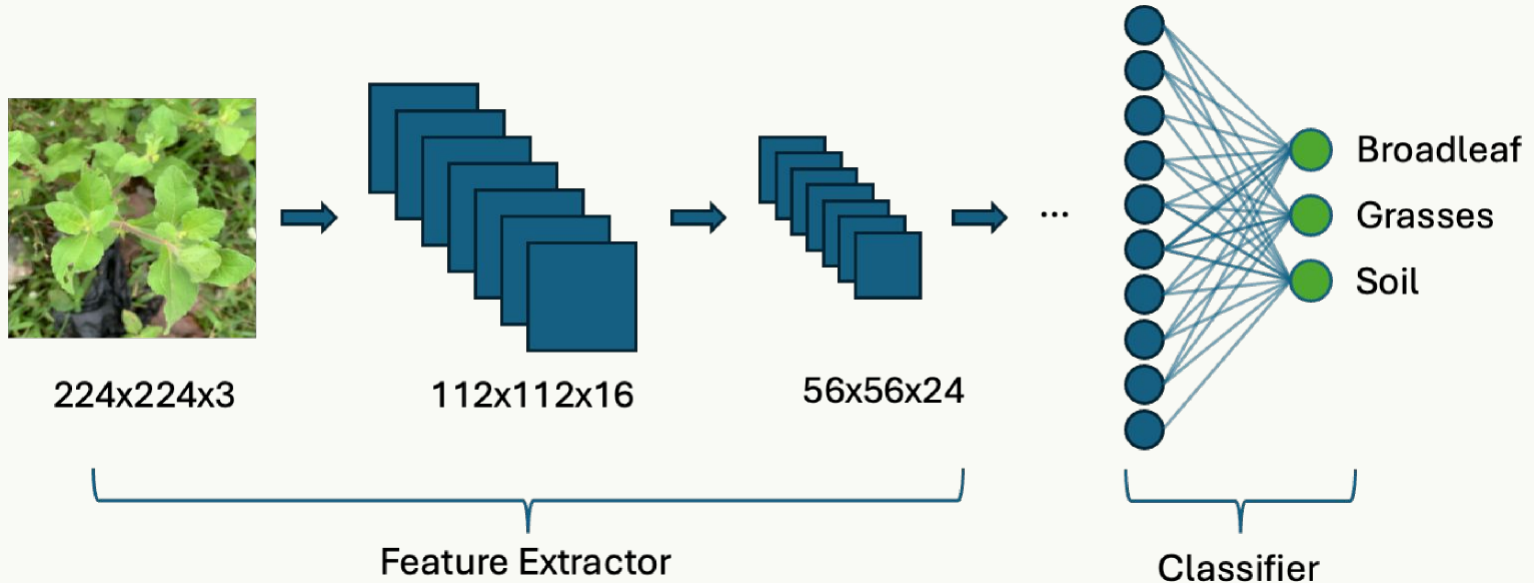
Soil / Background



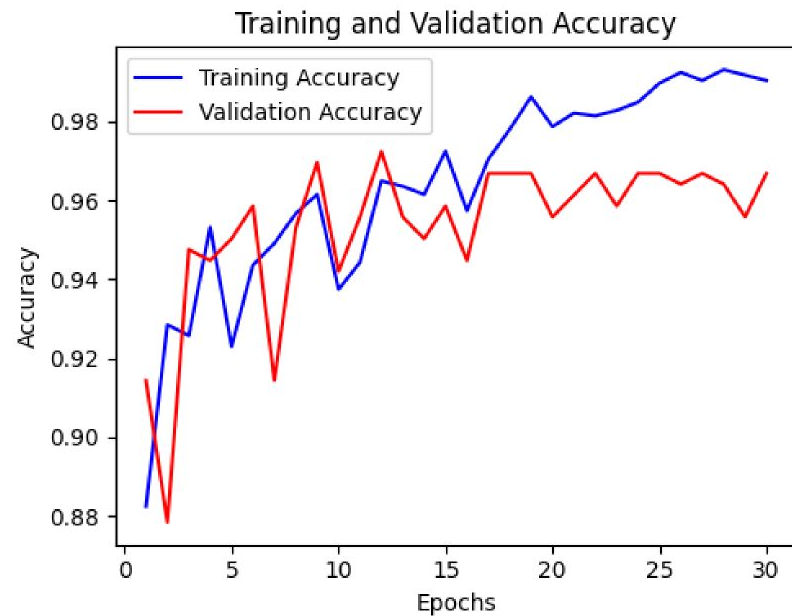
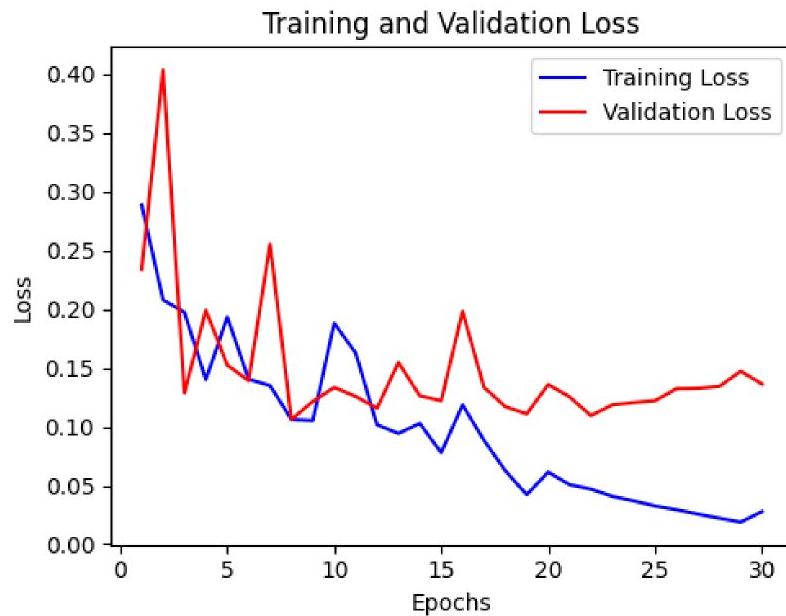
1000+ images

Model

WeedNet



Model



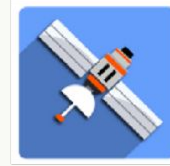
Hardware configurations

Sony IMX 500 AI Camera



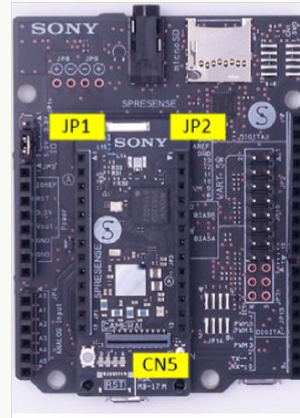
Raspberry Pi Zero 2 W

GPS Signal



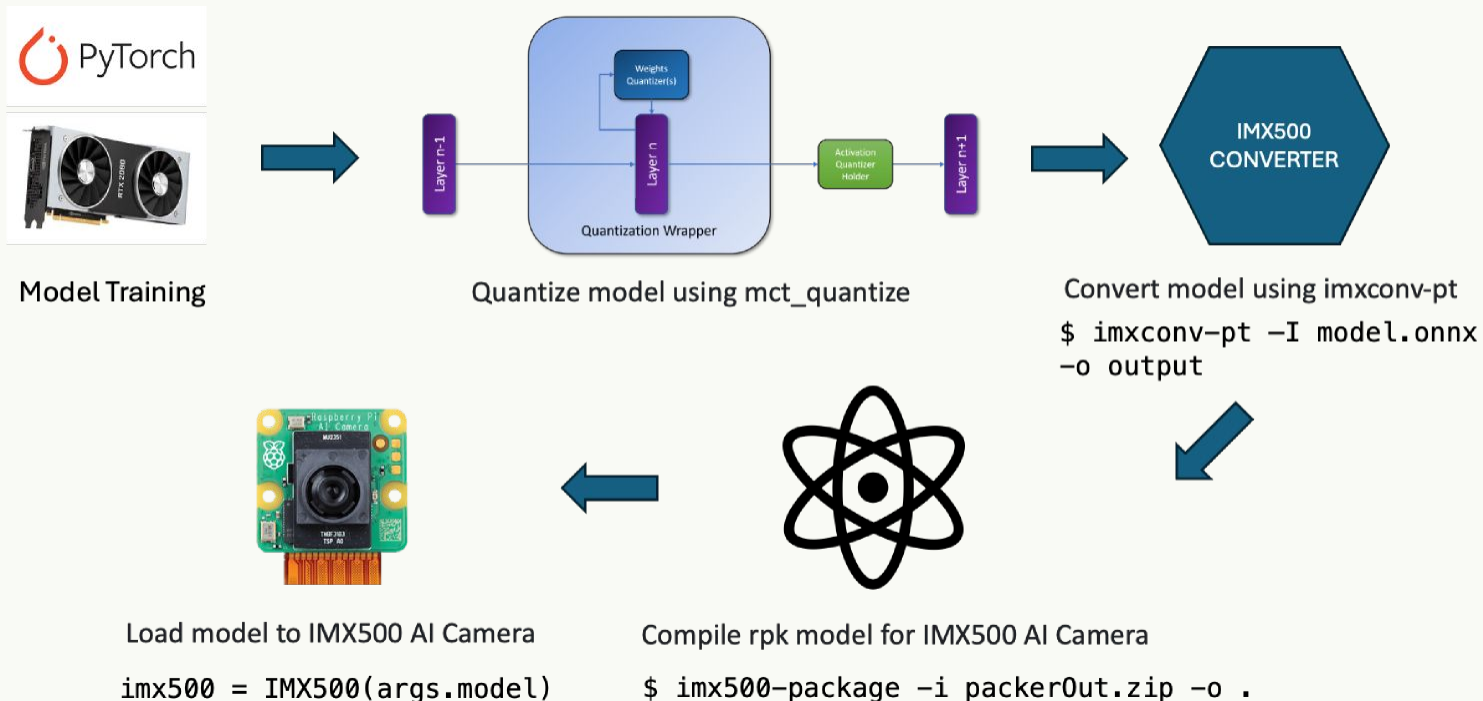
/dev/serial0
RX

TX



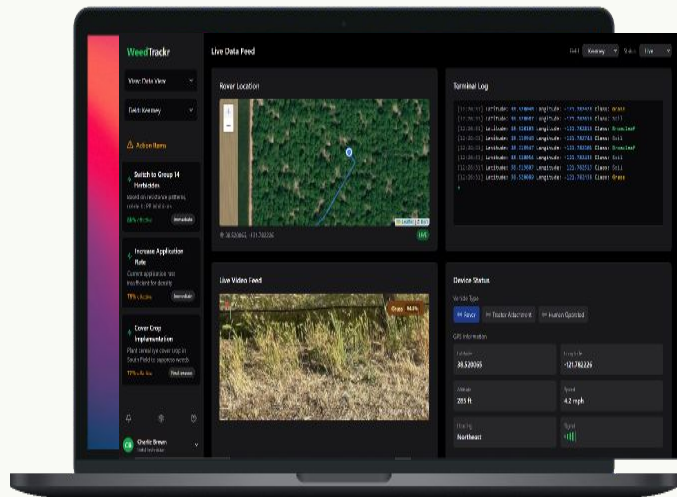
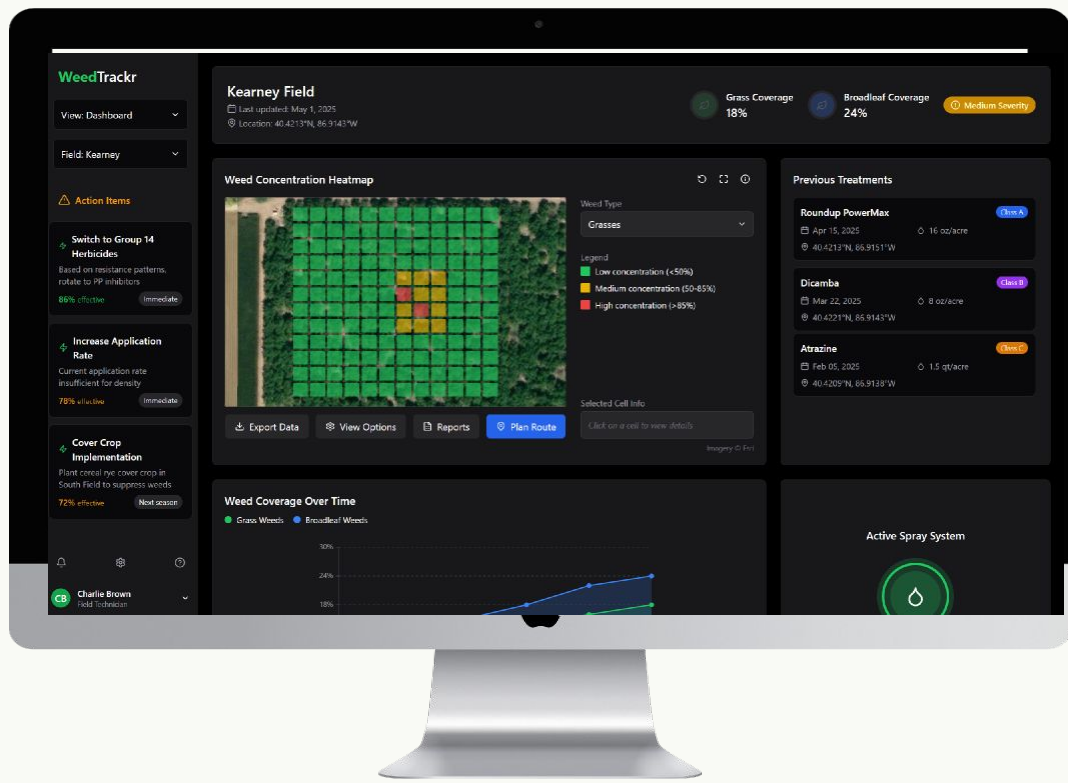
Sony Spresense Main Board

Deep learning model conversion for IMX500



Let's see the WeedTrackr in action

Dashboard



So why now? 🤔

- 1. Weeds are here to stay**
And it's time we manage them more efficiently.
- 2. *Regulations are tightening***
Governments are cracking down on overuse and runoff.
- 3. Input costs are *climbing***
Chemicals, labor, and fuel are more expensive than ever.
- 4. The tech is ready**
AI and robotics are finally accessible and scalable.

Here's the impact

Cut herbicide costs 90%

Only spray where it's needed. No more blanket treatments.

Boost crop yields

Fewer weeds + better plant performance.

Reduce manual labor

Automate weed scouting.

Protect land health

Minimize chemical buildup & preserve long-term biodiversity.

Keep food cleaner

Reduce health issues from herbicide over-usage.

Stay compliant

Meet evolving environmental standards & sustainability goals.

WeedTrackr

Weed vigilance and precision management



Built by Heesup Yun, Jonathan Berlingeri, Ethan Truong, and Nathan Chiu



2025 AIFS × Sony AI AgTech Challenge