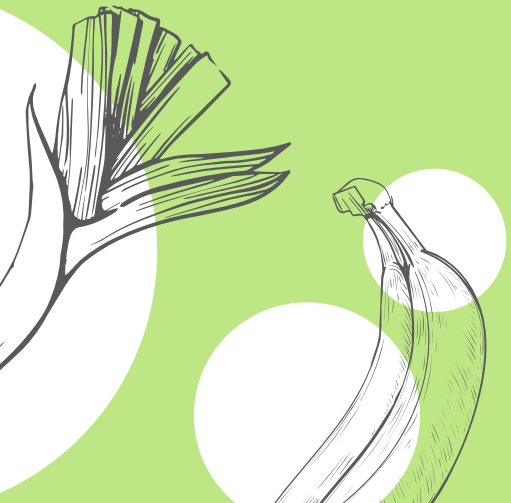
Cropsia

Analyzing real-time aerial data to prevent crop diseases.



$220 billion lost = 40%

of global crop production is lost to plant diseases per year according to The Food and Agriculture Organization (FAO) of the United Nations

Source: gov.uk

Cropsia

Meet Antoine Durand

Name: Antoine Durand

Age: 87

Profession: Orchardist (Apple farmer)

Location: Normandie, France

Solution

Drones

Collecting aerial images (such as NDVI) using sensors on the drone.

Computer Vision

Using aerial images to perform image classification and identify crop diseases.

Recommendations

Providing recommendations to prevent the spread of crop diseases and production loss.

Our Drone: Precision + Cameras

Images from the DJI P4 Multispectral

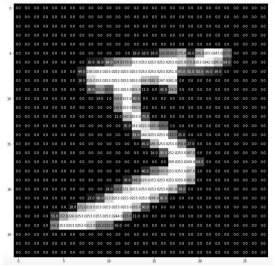
87,000 images

Our dataset already consists of 87,000 images of healthy and diseased plants to train our algorithm to identify 38 different diseases.

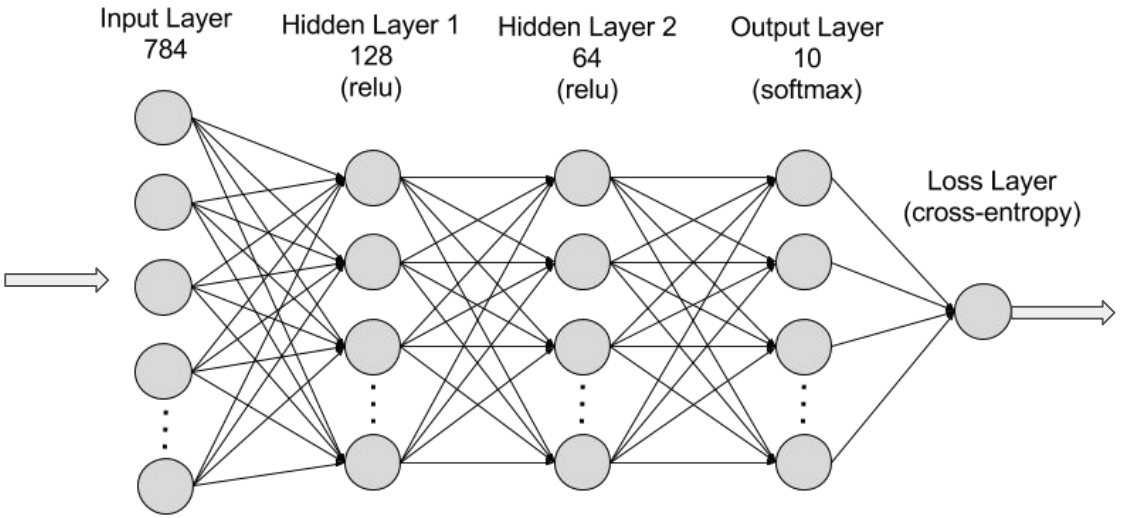
Source: Kaggle

Basic Architecture

Modeled after MNIST dataset



Original input



Neural Processing (Convolutional)

0	1% confidence
1	1% confidence
2	1% confidence
3	1% confidence
4	1% confidence
5	91% confidence
6	1% confidence
7	1% confidence
8	1% confidence
9	1% confidence

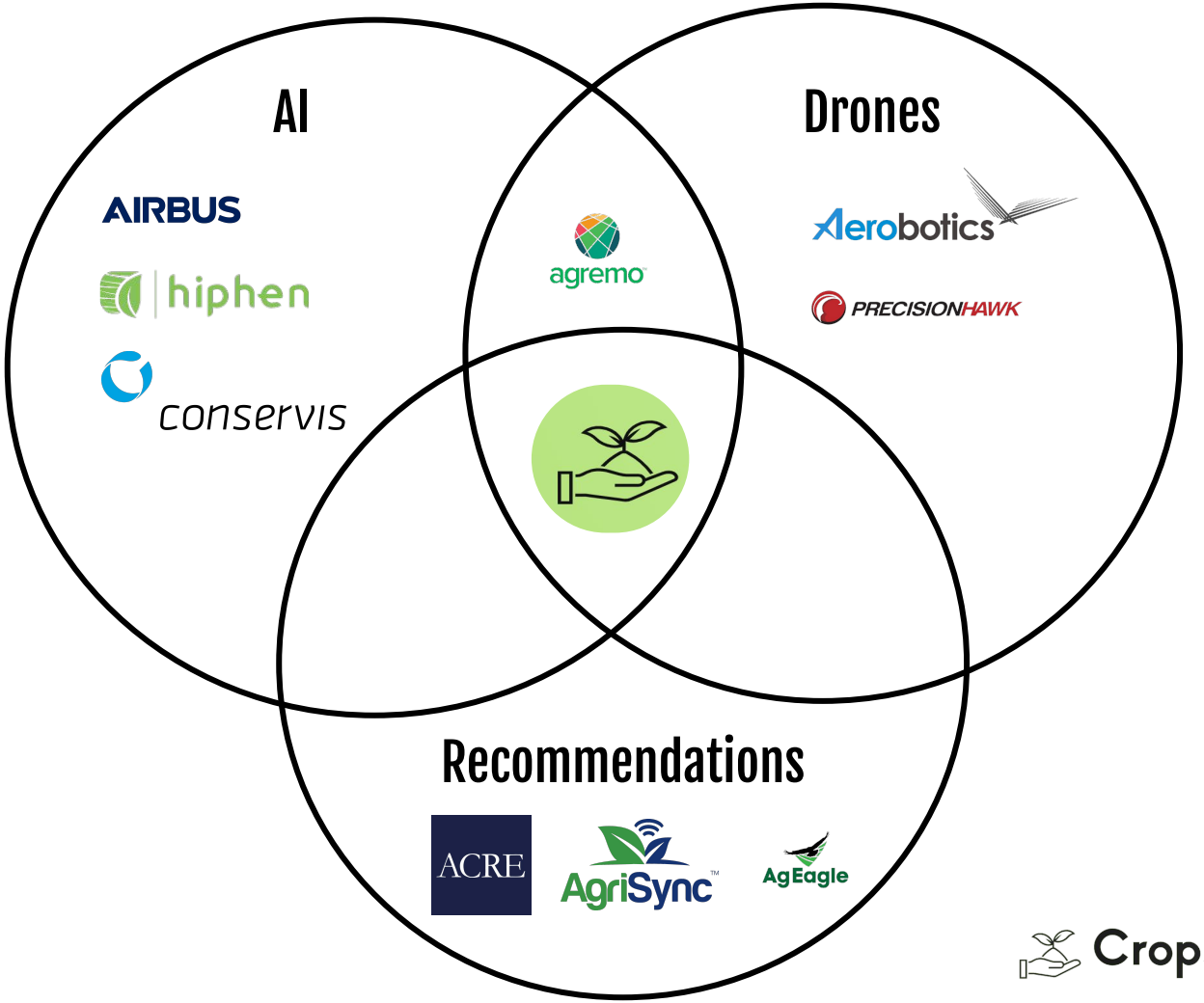
Output (90%+ accuracy)

Convolutional Neural Network

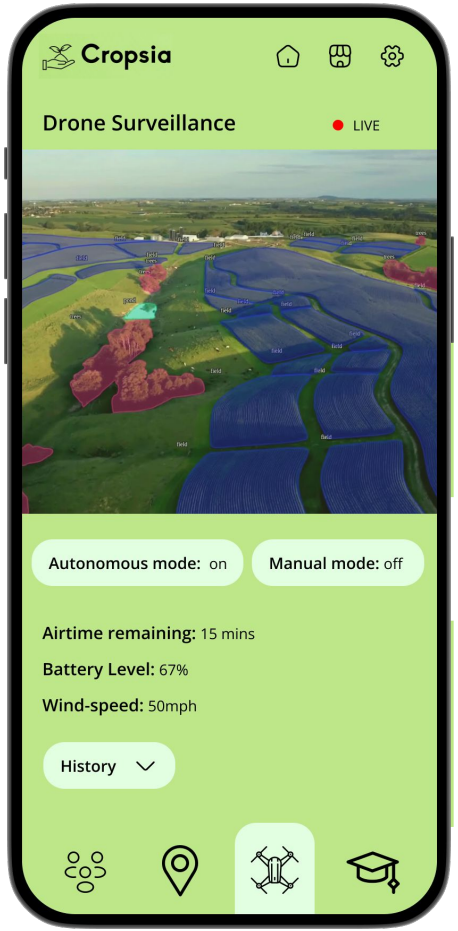
Leaf infected with Apple Cedar Rust

91%	Apple Cedar Rust
1%	Apple Black Rot
1%	Apple Scab
1%	Cherry Powdery Mildew
1%	Corn Gray Leaf Spot
1%	Grape Black Rot
1%	Tomato Early Blight
1%	Potato Late blight
1%	Potato Early Blight
1%	Strawberry leaf scorch
. . .	

Our Unique Advantage



Cropsia


Cropsia
Drone Surveillance
LIVE
Autonomous mode: on
Manual mode: off
Airtime remaining: 15 mins
Battery Level: 67%
Wind-speed: 50mph
History


Cropsia
Your Farm
Diseased
Healthy
Disease: Cerospora
Disease growth rate (%): 50% ~ 2 weeks
Healthy plants (%): 30%
Soil moisture (%): 45%
Soil temperature (°C): 20.2°C

Cropsia

Cropsia

Recommendations

Based on your crop diseases

Potato Blight

cut off all growth above soil level and **burn it as soon as possible** This will minimise the infection on your soil and also reduce the risk of you passing potato blight on to neighbours

Cedar Apple Rust

Spraying apple trees with copper can be done to treat cedar apple rust and **prevent other fungal infections**. If you see the lesions on the apple leaves or fruit, it is too late to control the fungus.

Black Spot

Black Spot

Cropsia

Community

Your Farming Colleagues

Farmer Joe	Crops: Peaches
Farmer Idhant	Crops: Corn
Farmer Darcy	Crops: Grapes

Estimated cost per person to rent drone:

$100 per month

Add Colleagues

Farmer Naina	Crops: Apples
Farmer Vivek	Crops: Potatoes
Farmer Abhilash	Crops: Tomato

Load more...

Cropsia

Cost analysis

The cost of application of our technology per acre:	**1.30 $**
Increase in profit per acre due to the application of our technology per year	**20 %**
Profit per acre of an apple orchard per year	**2,324 $**
Increase in profit for the farmer with the application of technology per acre per year	**464.80 $**

Google Sheets Source

Cropsia

Thank You

Cropsia

Analyzing real-time aerial data to prevent crop diseases.

By Vivek, Abhilash, Naina, Idhant, and Darcy