JGD
SGD

ROOTED TECHNOLOGY SUPPORT SYSTEM

TEAM INFINITY – AG/TG1, TG2 AND TG4

TEAM INFINITY

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BASIC IDEA

Our aim is to integrate a plethora of sensors and relay the information to a smartphone, so that all the necessary information is at the fingertips of the farmer.

Further, the app will be able to predict the onset of diseases in livestock and plant life using the principles of Machine Learning.

Motivation

- **5000+ Annual suicides**
  States like Maharashtra and Telangana record high suicide rates every year.
- **Millions still in distress**
  Due to inadequate irrigation and fertilizer facilities, many still suffer.
- **One of the largest employers**
  Agriculture is still one of the most employing divisions in the country.

IT IS THE NEED OF THE HOUR THAT WE USE WHATEVER TECHNOLOGICAL RESOURCES AVAILABLE TO HELP AND ASSIST FARMERS.

OUR SOLUTION -

FARMER ASSIST SYSTEM USING IoT, DIP AND ML THROUGH ANDROID MOBILE APPLICATION.

With a little help from your smartphone AND sensors, a lot of support can be extended to the farmers

PART - I

Machine Learning to predict the onset of diseases in livestock. Furthermore, a number of add-ons have been integrated with the Android mobile application “Sprout”.

Datasets that were available online had been pre-processed to suit the Indian conditions. Through a Yes/No questionnaire designed for the farmer, the app can warn the farmer of an oncoming disease.

The Android application can predict the onset of **Diseases in Plants and Farm Animals** from symptoms entered using Machine Learning.

PART - II

Multiple sensors are interfaced through an arduino and the data is relayed to the farmer through the app. Further, the Node.js collects the data and parses it onto plot.ly to generate beautifully transcripted graphical representations

WE WILL BE ABLE TO DETECT -

HUMIDITY

TEMPERATURE

MOISTURE

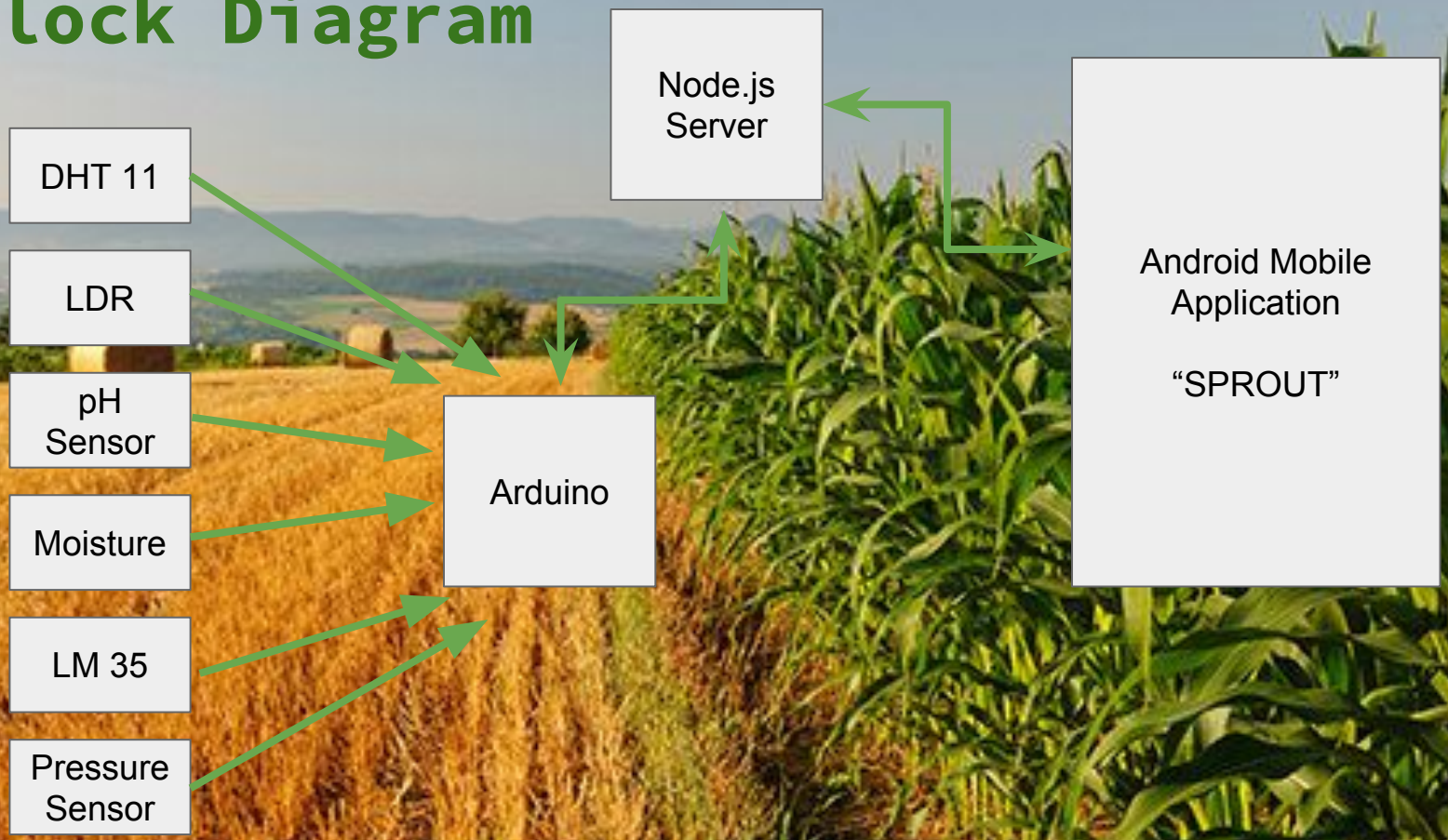
LIGHT INTENSITY

PH

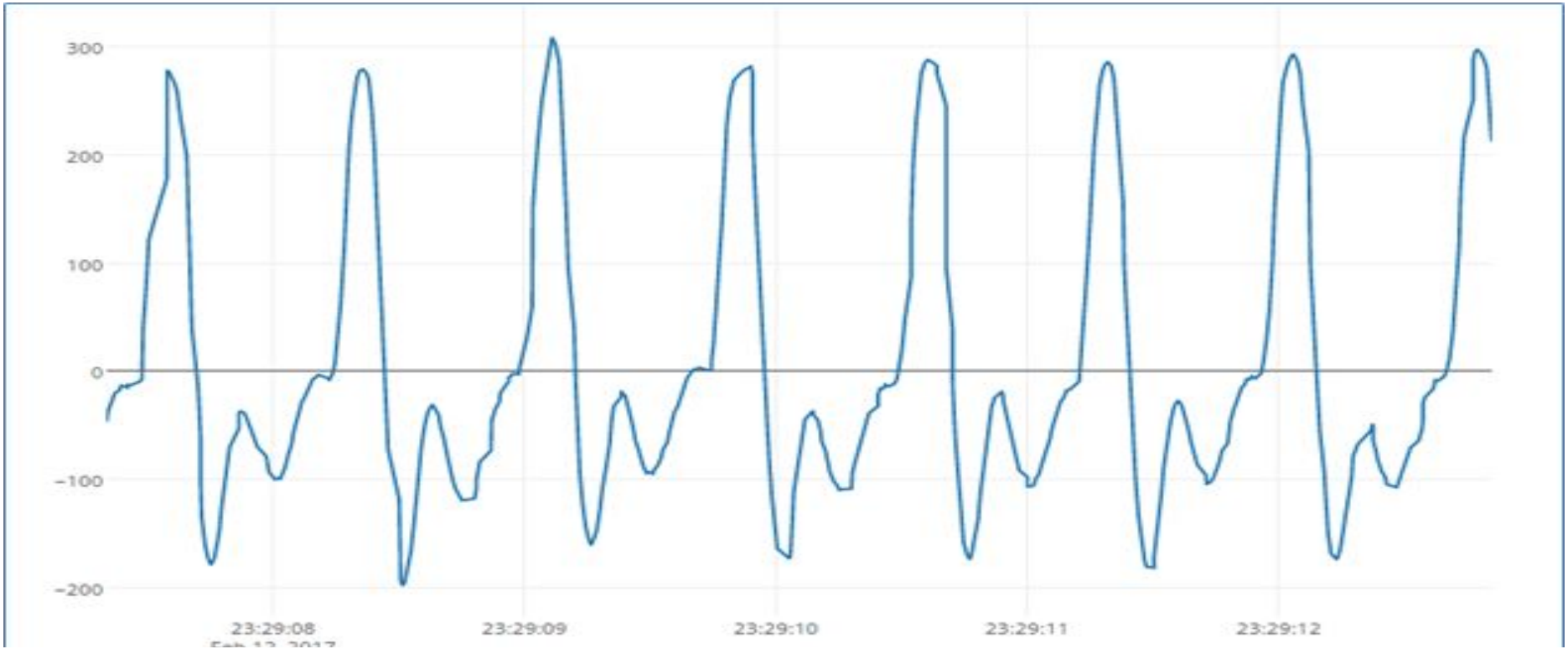
PRESSURE

PRESENCE OF WILD ANIMALS

Block Diagram



Using "SerialPort" and "Plot.ly" libraries in NODE.JS

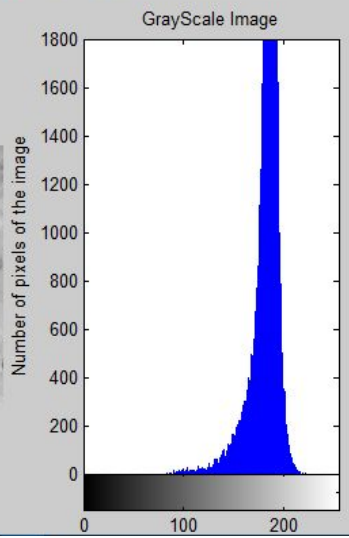



Workspace
Explore
Enterprise
API libraries
Help
Profile
NEW GRID
IMPORT
SAVE
COPY
EXPORT
UNDO
REDO
TRACES
LAYOUT
AXES
NOTES
LEGEND
FIT DATA
THEMES
Light Intensity measured by an LDR
Click to enter Plot title
Click to enter Y axis title
200
150
100
19:37:00
19:37:30
19:38:00
19:38:30
19:39:00
19:39:30
19:40:00
19:40:30

PART - III

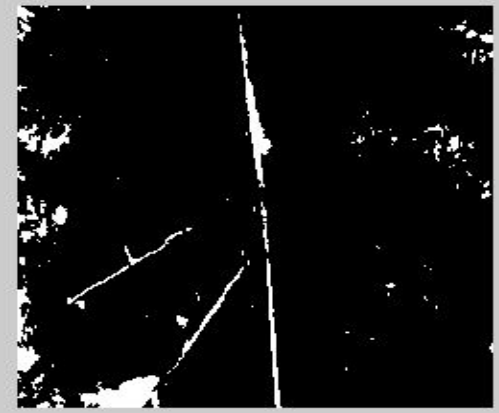
Image Processing Algorithms run on MATLAB will successfully predict the diseases occurring in plants.Images of the plants will be taken manually at the repository.

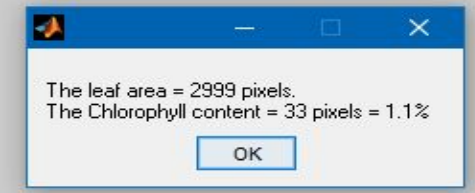
CHLOROPHYLL CONTENT



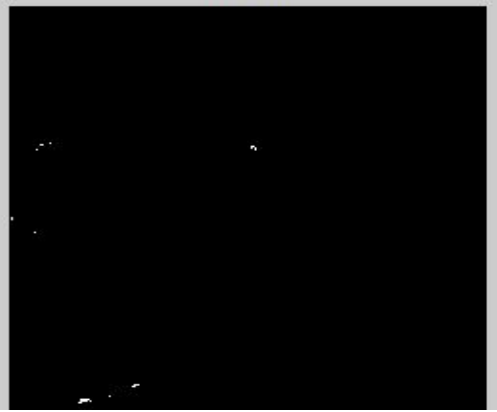
Original Grayscale Image

Binary Image, leaf mask



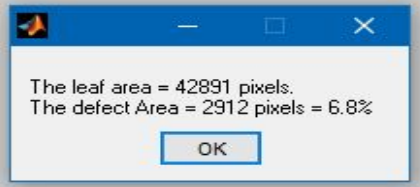


Defects



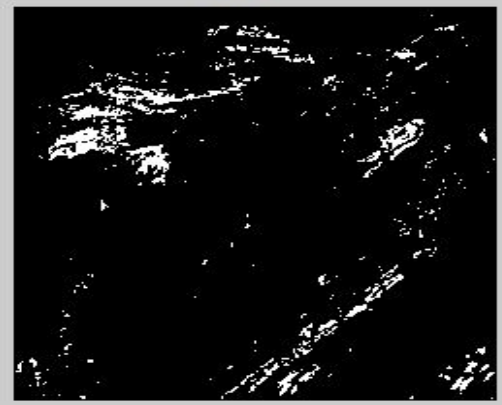
Chlorophyll Percentage

Original Grayscale Image



Binary Image, leaf mask

Defects



EXAMPLE-1

Figure 1

File Edit View Insert Tools Desktop Window Help

Figure 2

Edit View Insert Tools Desktop Window Help

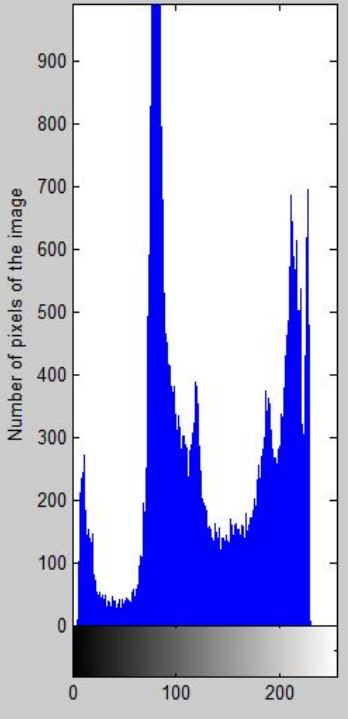
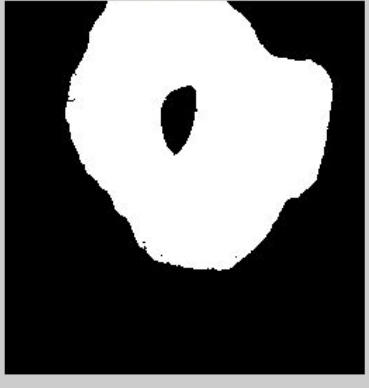
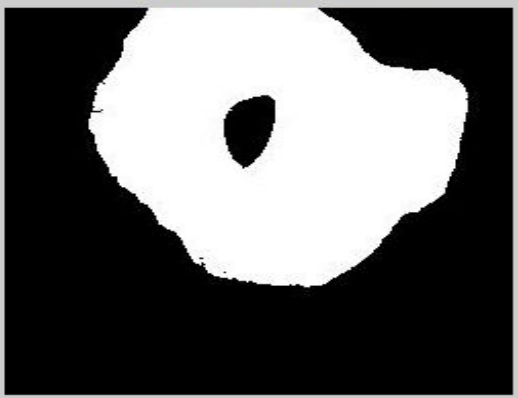


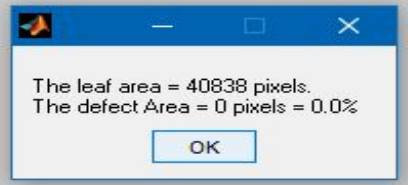
Figure 4

Edit View Insert Tools Desktop Window Help

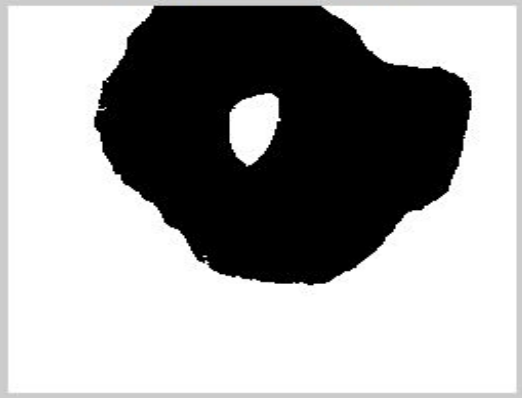


Original Grayscale Image

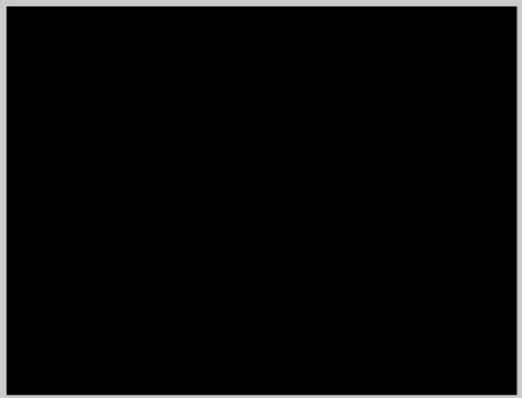




Binary Image, leaf mask

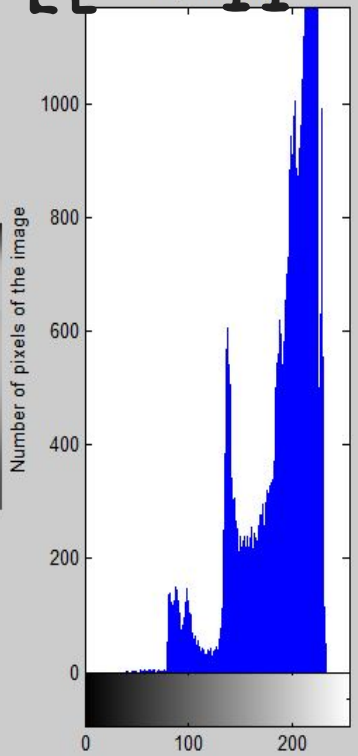


Defects



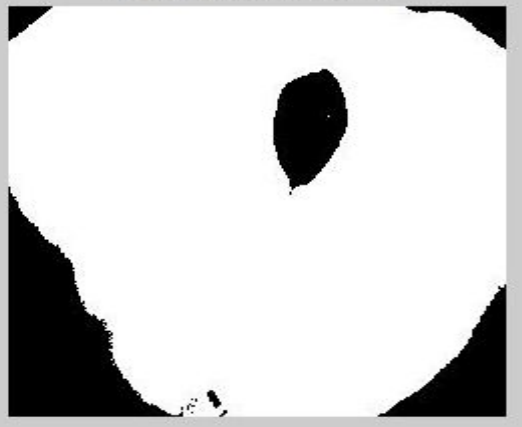
No Holes!

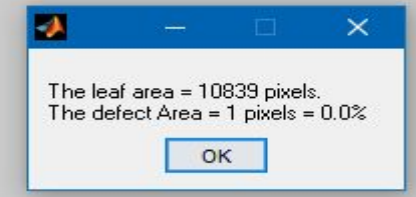
EXAMPLE - II


GrayScale Image
Number of pixels of the image
1000
800
600
400
200
0
0
100
200

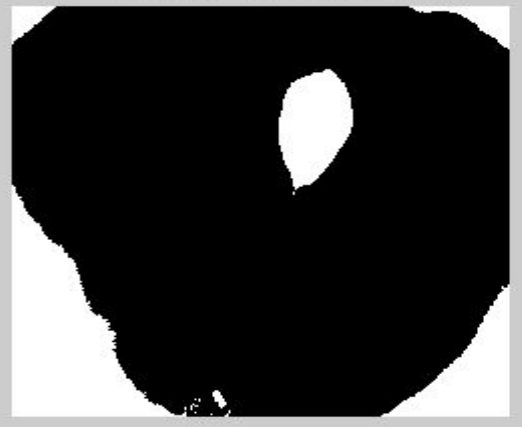

Threshold Image

Original Grayscale Image





Binary Image, leaf mask



Defects

1 HOLE!

PRODUCT SPECIFICATIONS

Operating Voltage	5-7V
Max Current	100-130mA
Weight	350-400g
Output	Humidity (%) Temperature (Degrees Celsius) IR (Degree of closeness) Piezo (Presence detection)

Feasibility

Cost

Our end product offers low cost long term solution contrasting present day high cost agro-tech solutions.

Time

Our prototype will be ready in 1 months and can be made available to the market in another 4-5 months because of its easy fabrication.

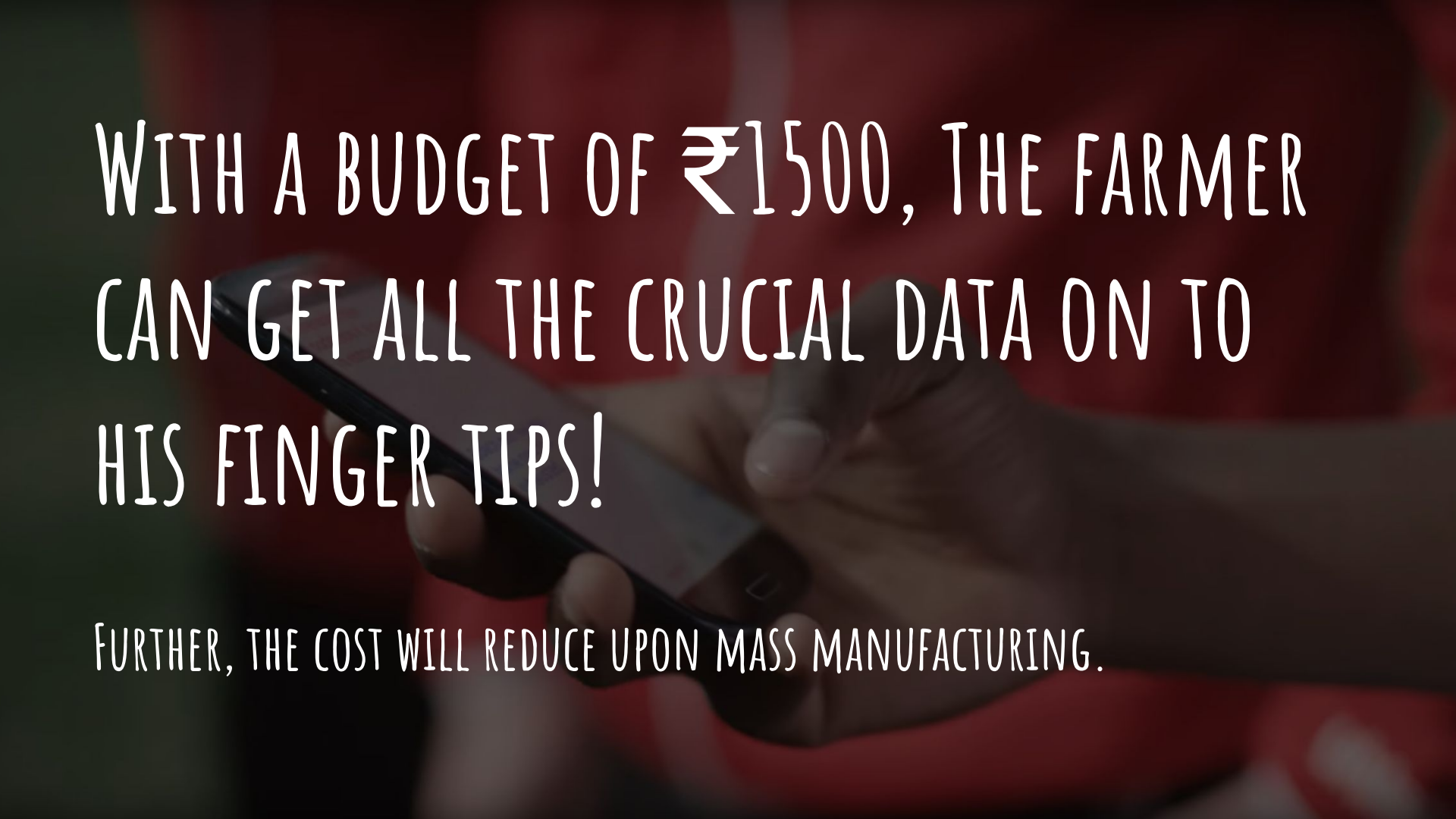
Technology

We provide state of the art technology for the consumers to make their life better.

Story for illustration purposes only

COST ANALYSIS

COMPONENT	COST
Temperature and Humidity Sensor	₹180
Moisture Sensor	₹185
Piezoelectric Sensor	₹140
IR Sensor	₹135
LDR	₹99
Arduino Uno	₹450
Power Supply	₹300
Hardware and Consumables	₹100
Application	₹0
Grand Total	**₹1589**



With a budget of ₹1500, The farmer can get all the crucial data on to his finger tips!

Further, the cost will reduce upon mass manufacturing.


Product
Benchmarking
MEET
FARMBOT
https://farm.bot/

Our Product vs. FarmBot

Cost

FarmBot - $2495 - $3695

Our Product - ₹1000 - ₹1500

Technicalities

FarmBot - Raspberry Pi, Timing Belts, Farmduino

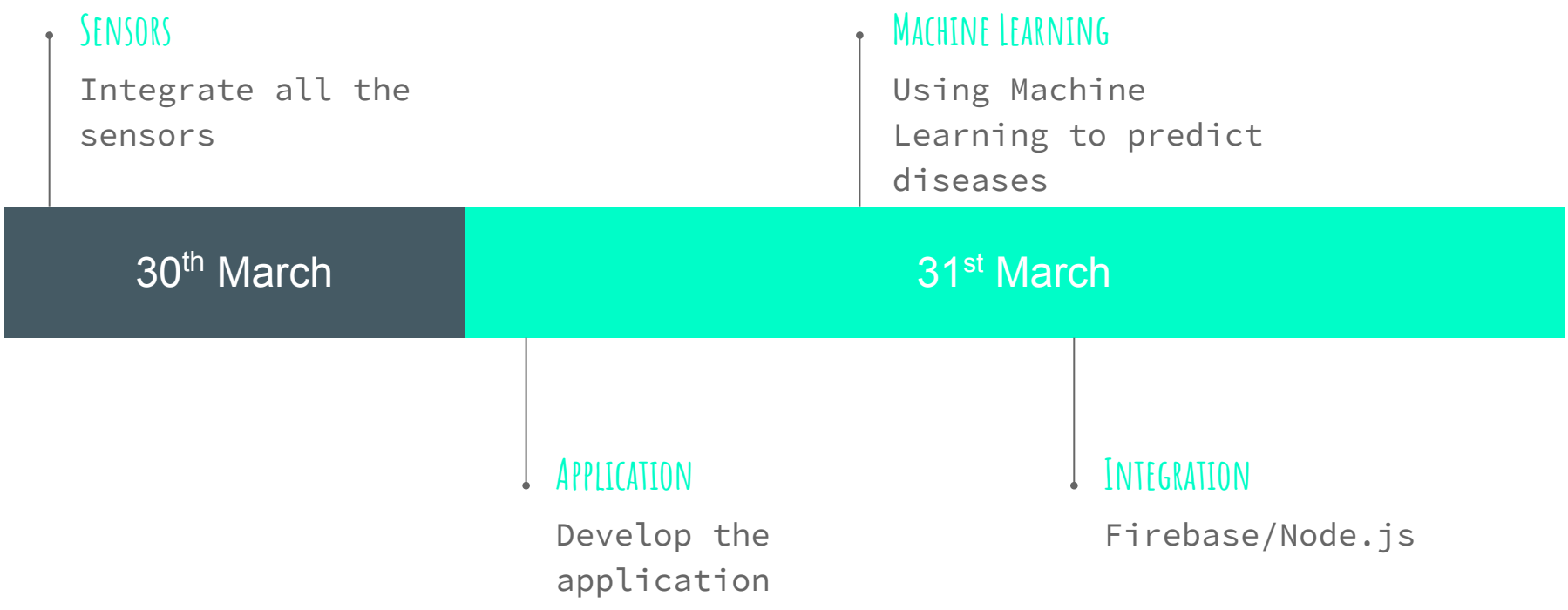
Our Product - Plethora of sensors, Free App, Arduino Uno

Target Range

FarmBot - Only 600 users across the globe

Our Product - A wider range of people can be reached because of low price and USP

Milestones


Sensors
Integrate all the sensors
Machine Learning
Using Machine Learning to predict diseases
30th March
31st March
Application
Develop the application
Integration
Firebase/Node.js

DELIVERABLES

Our End product that will reach the MARKET..

- **An all-in-one block of sensors integrated with the Arduino**
  The block will relay the data to the App that will keep the farmer posted
- **An exclusive Android mobile application**
  The application will be able to predict the onset of a disease in both plants and animals through the results of a questionnaire using machine learning

- **Inexpensive product with good range and durability**
  The block will be protected by hardware that would be resistant to climate extremities.
- **All-in-one mobile application**
  Additional add-ons of simple courses for farmers, G-maps and G-weather API integration as a future add-on.


Help from the Government in terms of funds and DATASETS.
Pradhan mantri KRISHI Yojana

In conclusion, we're confident that our low-cost application based integrated sensor product will be of utmost help to the farmers

THANK YOU

@VinaiDRT