**Vision statement**

**\*Project goals:**

Today, agriculture in our country and around the world is a very essential component in the continuation of our human existence.

There are a lot of farmers in the world who work the old way (without any technology), mostly these are farmers who live in third world countries.

Our vision is to help these farmers improve their grain yield and the efficiency of their agricultural system with the help of advanced technology we work with - the ESP device.

We believe that integration of advanced technology (that no so complicated) really can help some farmers to maximize their grain yield and quality and by that improve agriculture in the world.

**\*Project scope:**

In our project we will collect up-to-date information:

soil moisture percentage -

toxin levels -

and regularly present its soil condition in all indices.

Our device doesn't give information on the crop itself.

**\*High levels features:**

Our high features in the project are:

-The devices measure and "obtain" very vital information through sensors that we connect to it.

-The devices works with closed code that we write into it (Arduino).

-IOT: A neural network that composed of ESP devices that communicate and transmit data to each other (details below). one device will be responsible for receiving all the information from the other devices and will be responsible for transmitting the information to the cloud.

/////Because the device is very cheap and simple to operate we can use large quantities and build a large network of several devices that can communicate with each other and transmit the relevant information according to what we set./////

**\*Milestones:**

1. Investigate the types of devices and types of sensors relevant to agriculture.

2. Writing simulations of working system of neural network that composed of ESP devices that transmit the data to the cloud.

Our idea for implementation:

Each device will "hold" a list of neighbors (devices that can communicate with them depending on the range), location value, hash-set of measurements(key is node id and value will be list of measurements of the relevant node, a temporary node that will be the index for sending the measurements and a distance value that will determine according to the number of devices that the data passes from the relevant device to the responsible ESP device.

The information will be transmitted as follows:

In each period of time the device will transmit his measurements data. -

-First he will check which of his neighbors has the smallest distance (i.e. the nearest neighbor to the responsible device ), to which he will send the relevant data and wait period time set for a confirmation message that the data has passed successfully.

-If the confirmation message does not arrive on time, he will check which of his neighbors has the smallest distance in line and so on until he receives a confirmation message.

-When the confirmation message is received, the temporary node is updated to indicate the last node that was sent successfully and thus continues to perform this routine.

-The responsible node for transmitting the information to the cloud will transmit it for a set period of time and will also wait to confirmation massage from the cloud.

3. writing code to the devices with Arduino that make the device do the measurements and transmit it forward to the other devices.

4. Simulations the device and see the data we get and confirm the data is correct.

6. Connecting the devices to a real neural network, communicating with each other and transmitting the relevant data on our demand.

7. Gathering relevant information to improve productivity and system efficiency.

8. Scattering devices in the field and collecting large amounts of information from the devices measurements.

9. Draw conclusions from the data that will lead to improvement of the farmer's crop.

**\*elevator statement:**

For farmers all over the world who wants to upgrade their system efficiency and their crop productivity by combination of new technology. The "PROJECT-NAME" is an agriculture product that you can find in the market currently, this system is very cheap and efficient for farmers with any size of soil, unlike other companies we give a dynamic system that can change according to the farmer's demand.