Anna Rakshak (The Saver of Food Grains)

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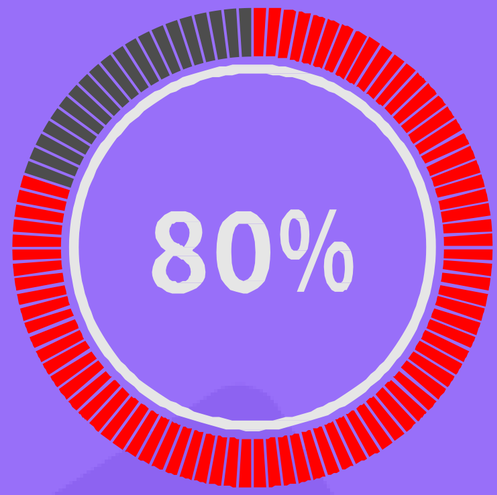
PROBLEM STATEMENT:

- More than eighty percent Indian agricultural stores are suffering from low maintenance problem, due to which agricultural products (worth 14,000 million dollars) are wasted each year.
- To control the infestations, different strategies are applied, but the **main issue occurs, due to improper monitoring of spoilage of product in cold storages.**
- Currently in India for monitoring these storages, manual methods are being used:

1. Checking presence of spoilage mold
2. Evaluating CO2 levels
3. Sampling
4. Checking odours

- These processes are very time consuming, so to mitigate all these shortcomings a **novel technique** is proposed in this research work.



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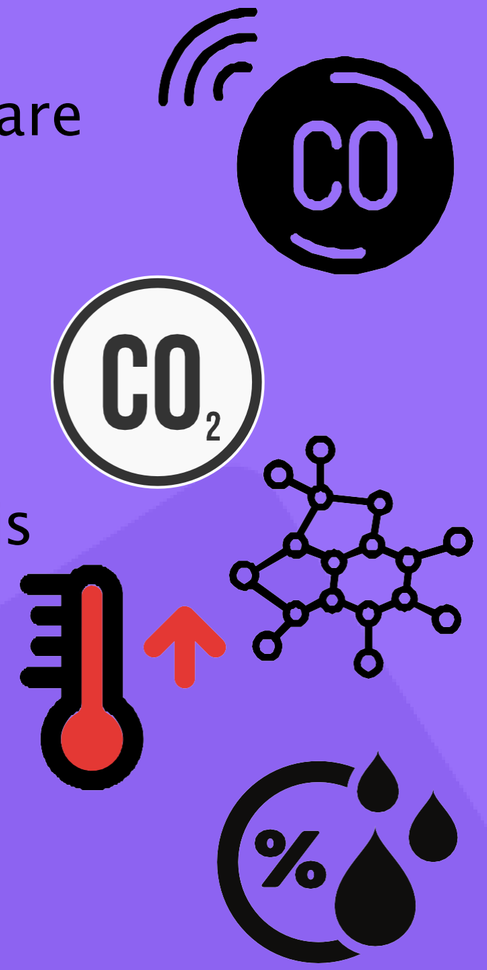
OUR SOLUTION:

On research, we came to know about the emission of gases, when grains are starting to get spoilt, we observed the majorly emitted gases to be:

1. **Carbon Dioxide(CO2)**
2. **Carbon Monoxide(CO)**
3. **Nitrous Oxide(N2O)**

- We also observed that there is a increase in climate factors during this period, namely being:

1. **Temperature**
2. **Humidity**



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OUR SOLUTION:

- Hence, we made a sensor equipped device which will measure the outputs of these parameters, the sensors being as follows:

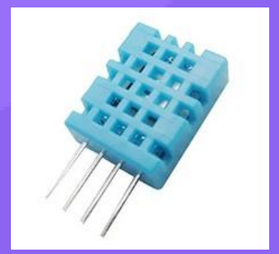
MQ9

Carbon Monoxide

MQ135

Carbon Dioxide Nitrous Oxide

DHT11



Temperature Humidity

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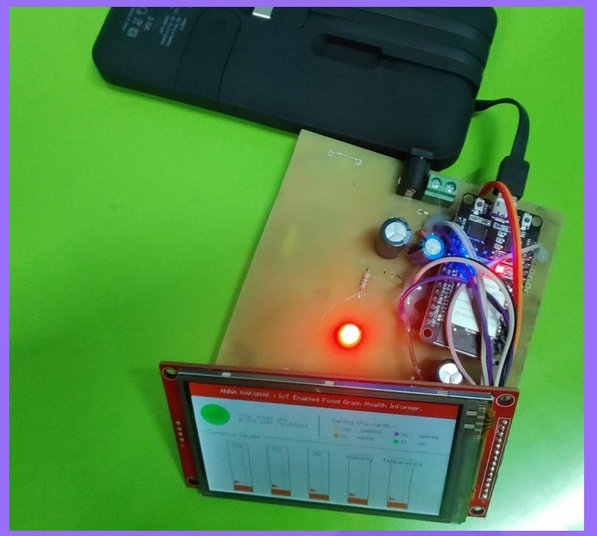
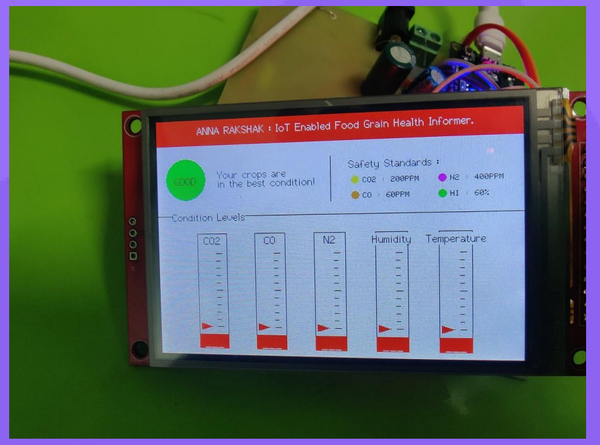
OUR SOLUTION:

- Now all these sensors send this information to an **ESP 32 microcontroller** which furthermore reflects this information on a **SPI TFT Display** and on a **cloud server ThingSpeak provided by MathWorks.**

- As soon as the emission of gases and level of temperature & humidity **crosses the threshold level, a warning message is generated** and sent to the cold storage owner, advising to take action regarding the same as soon as possible.





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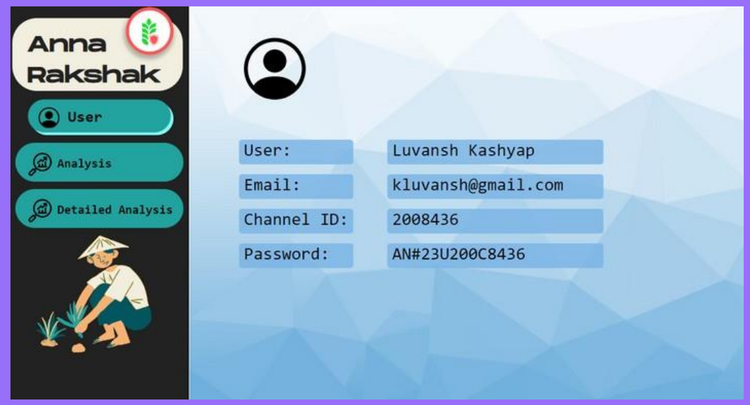
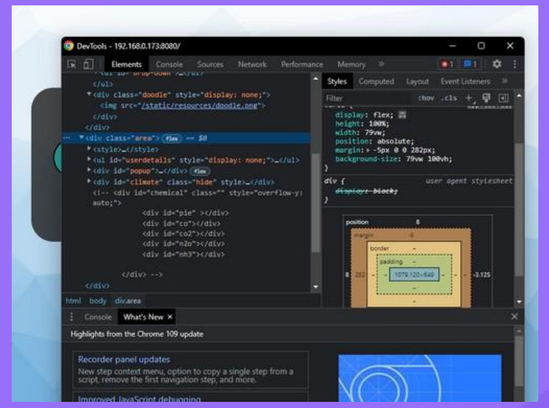
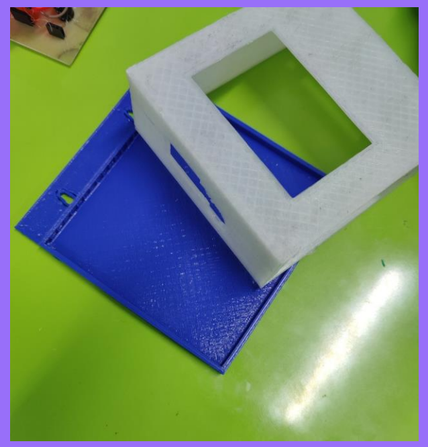
CURRENNT PROGRESS:

- As of now we have created a web application providing a better user interface and a seamless connection.







- We have also developed a 3D printed enclosure for the same.

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APPLICABILITY:

- Our vision is to team up with **FCI (Food Corporation of India)** at first we would like to start with the cold storages owned by the FCI(Government owned cold storages)and then furthermore provide our product to **private cold storage owners.**

Food Corporation of India

NOTEWORTHY:

- **Former Food Minister of Uttar Pradesh**, Mr. Atul Garg (currently working as, **Minister of State in the Government of Uttar Pradesh** and is a **Member of the Uttar Pradesh Legislative Assembly**, representing the Ghaziabad Assembly constituency) appreciated the idea and mentioned to work upon it, make the final product and begin with the testing phase.

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FUTURE GOALS:

- For the future aspects of our product, we are going to implement AI-Based model, which is going to **predict the grain spoilage time period**, to perform immediate recovery.
- We are also going to extend our reach to **international levels** as this problem isn't bound by any territories.
- Except the gases previously mentioned, gases like **hydrogen sulphide(H2S), ammonia(NH3)** are also released further we can install there sensors as well **improving the accuracy** of our product.

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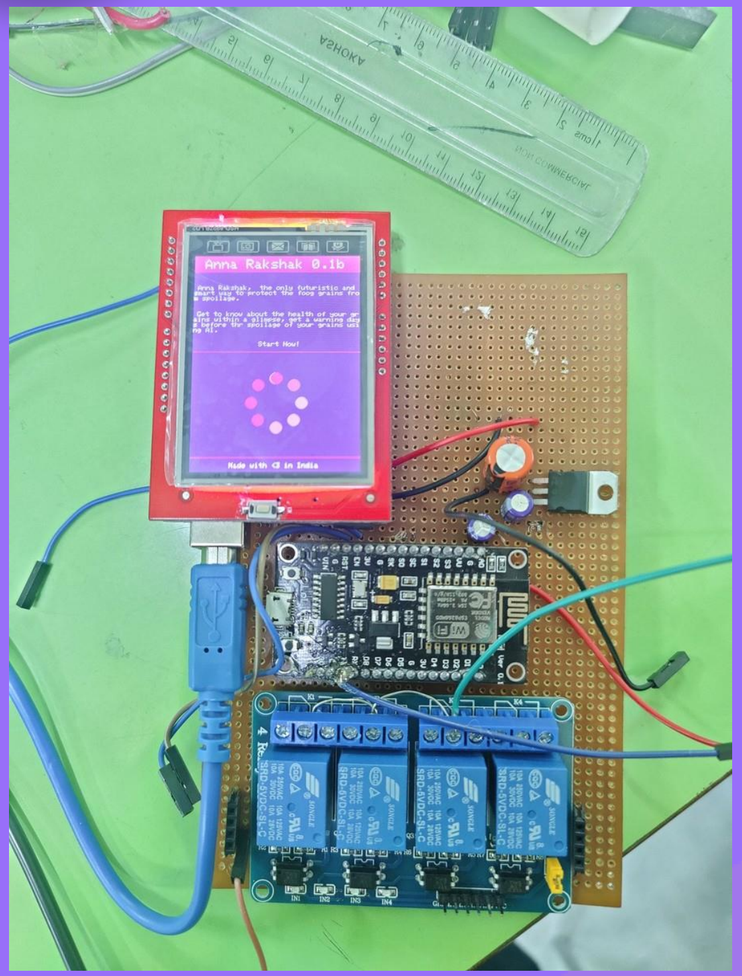
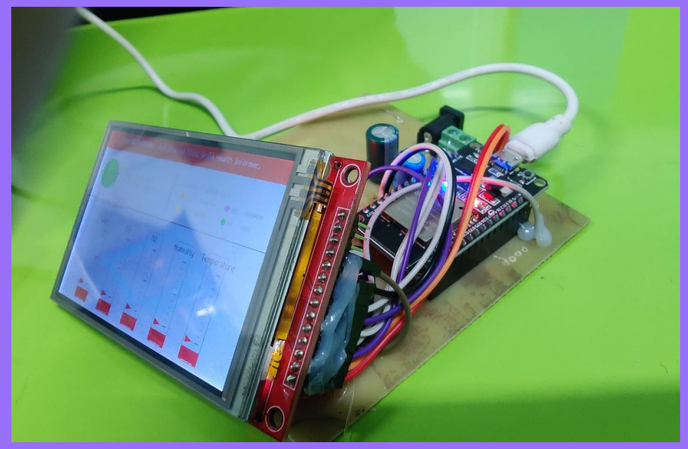
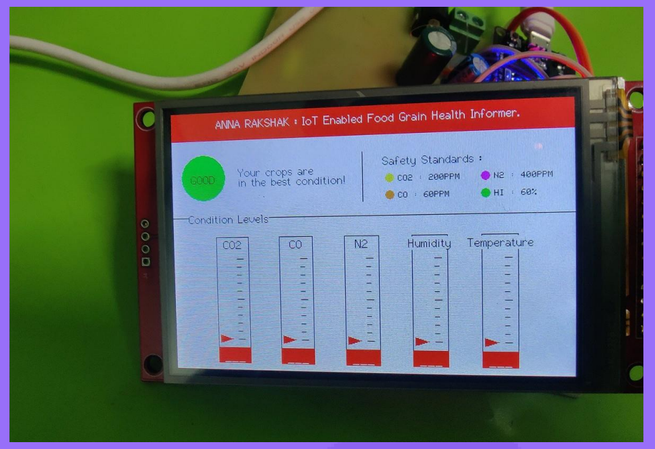
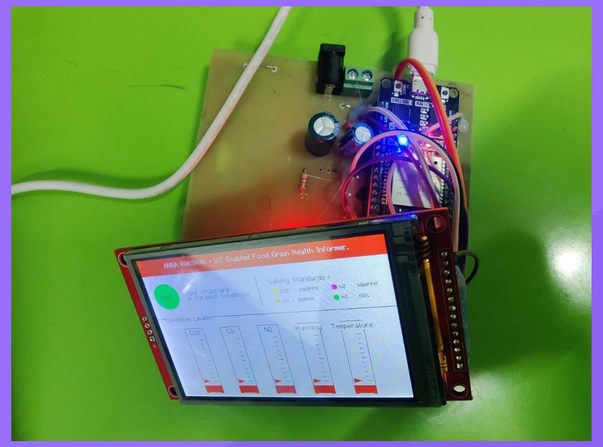
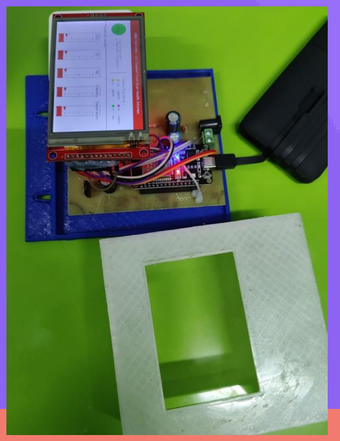
PROGRESSION:











PHASE-1

PHASE-2

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THANK YOU

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YOUTUBE LINK

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