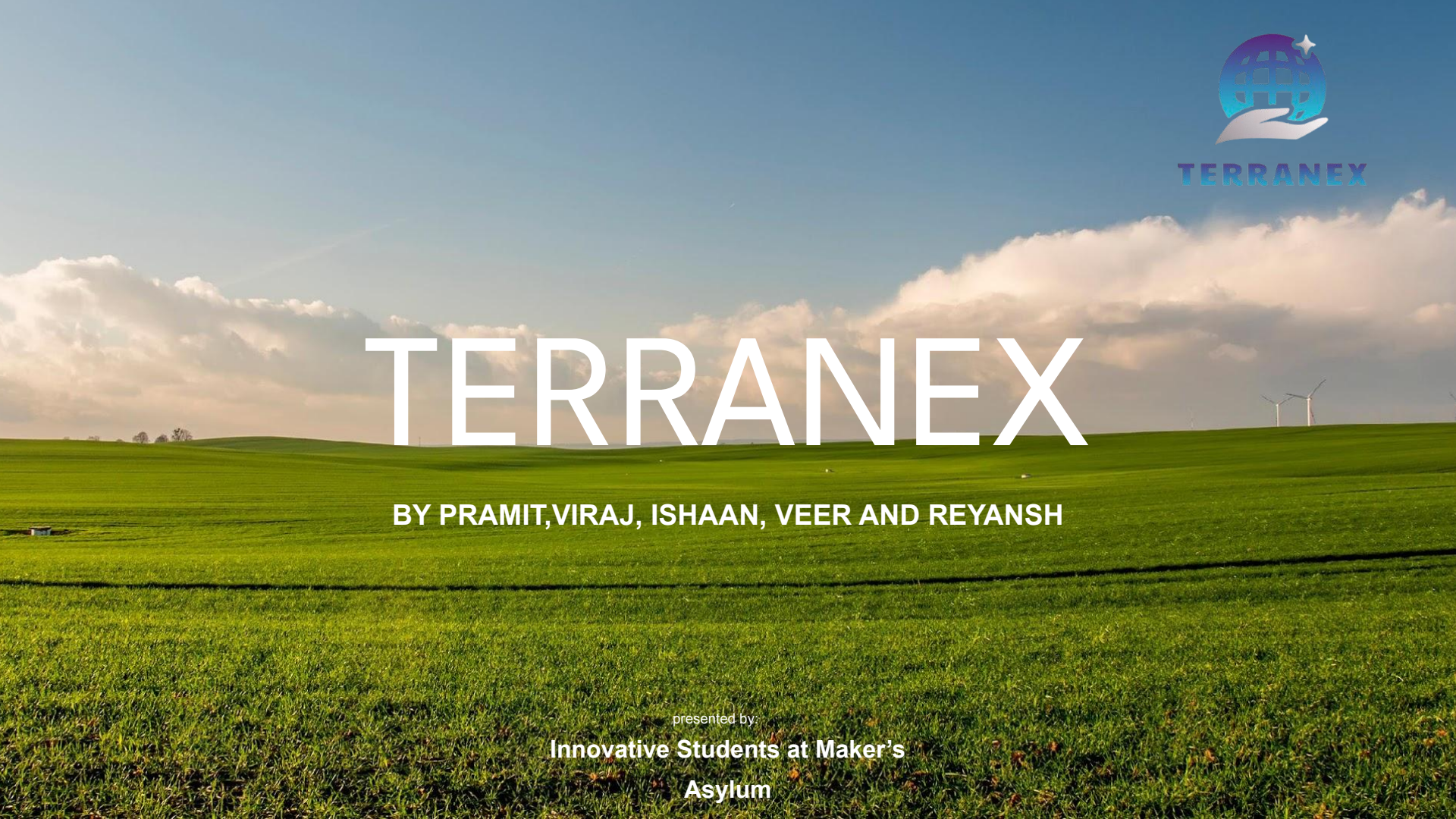


TERRANEX

BY PRAMIT,VIRAJ, ISHAAN, VEER AND REYANSH

presented by:

Innovative Students at Maker's Asylum

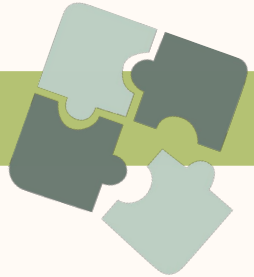
02

The Problem

Farmers don’t know the exact soil condition across their land, which leads to overwatering, underwatering, and wasted effort.

Another Perspective

Many modern solutions depend on high end technology like automated irrigation, drone surveillance, and massive platforms. While these are impressive, these tools often overlook the practical challenges faced by everyday farmers, especially in rural areas.



Our Perspective

TerraNex takes a different path, focusing on simplicity, affordability, and soil monitoring that any farmer can use to make smarter watering decisions.

Mechanical and Electrical Aspect

Our bot’s base is made of lightweight aluminum extrusions which are fitted together using metal angled brackets, t-nuts, and several screws. We have an acrylic sheet on top of this base which is where most of the electronics other than the motor. Our actuator is made out a lot of 3d-printed parts and a threaded shaft with v-wheels sliding on an extrusion. It also has a really heavy NEMA 23 motor mounted on the top of the entire actuator system. The main four motors are NEMA 17 motors and they are attached to 3d printed wheels with a foam layer for grip.

Software Aspect

We have developed an app that farmers use to map out their farmland and draw lines that the bot will follow as a pathway. The bot receives soil moisture sensor data from certain checkpoints along the pathway using a method called differential turning. For the actuator system, we have coded a NEMA 23 motor using Python. It is used to establish the movement of the actuator. When it moves clockwise, the soil moisture sensor is inserted into the ground, and when it moves anticlockwise, the soil moisture sensor retracts. The data from the sensor is immediately transmitted to the farmer’s application so that he or she can water the crops appropriately.


TERRANEX
THANK YOU
BY PRAMIT,VIRAJ, ISHAAN, VEER AND REYANSH
presented by:
Innovative Students at Maker's
Asylum