# HACKSTREET 3.0

Hackathon

# TEAM:
# NHCE AI

Member 1: N Manish

Member 2: B N Lohith Kumar

# TEAM PROFILE

**Member 1:**
**Skill: Machine Learning**
**Role: Dataset Creation and Model Training**

**Member 2:**
**Skill: Machine Learning and Designing**
**Role: Data Collection and UI Design**

# ML-BASED SMART SEED PLANTING DEPTH PREDICTION SYSTEM

## Optimizing Seed Planting Depth Based on Real-time Soil and Weather Data

“Harnessing ML to Grow Smarter, With Optimal Seed Planting Depth Predictions”

## Theme: Environment

# PROJECT SUMMARY

The ML-based Smart Seed Planting Depth Prediction System uses real-time soil and weather data to provide farmers with optimal seed planting depth recommendations tailored to different crops such as wheat, corn, and rice. By analyzing crucial factors like soil type, moisture levels, temperature, and humidity, the system employs ML algorithms to predict the ideal planting depth, ensuring healthier plant growth and improved crop yields. This innovative solution promotes sustainable farming practices by empowering farmers to make informed, data-driven decisions, reducing resource wastage like water and energy, enhancing crop productivity, and contributing to environmentally-conscious agricultural practices.

# PROBLEM STATEMENT

The problem statement for this project revolves around the challenges faced by farmers in determining the optimal seed planting depth, which directly impacts crop growth and yield. Currently, planting depth is often based on experience or generalized guidelines, ignoring real-time environmental factors like soil type, moisture levels, temperature, and humidity. This lack of precision leads to inefficiencies, such as overuse of water and energy, poor seed germination, and lower crop productivity. The goal is to address these challenges by leveraging ML to provide data-driven, personalized planting depth recommendations, improving agricultural sustainability and resource management.

# SOLUTION

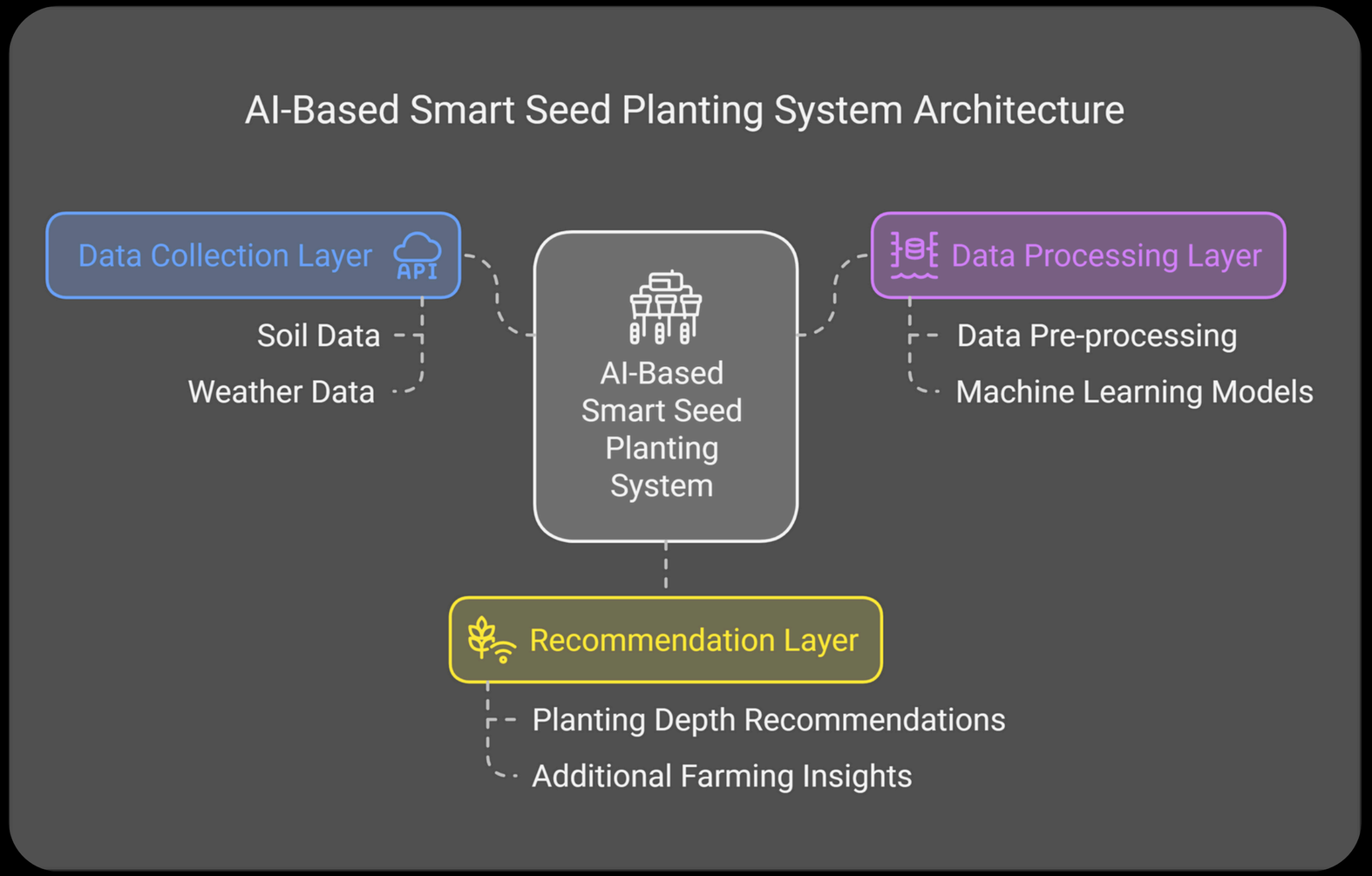
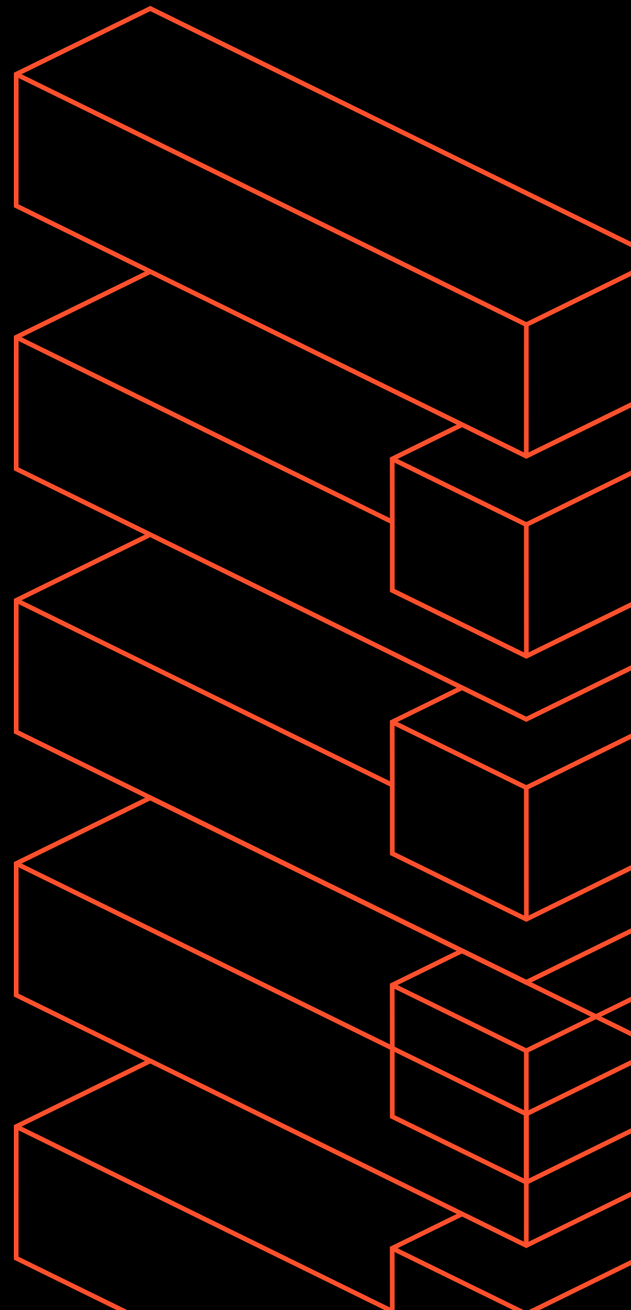
The ML-based Smart Seed Planting Depth Prediction System is an innovative solution that uses real-time soil and weather data to recommend the optimal planting depth for various seed types like wheat, corn, and rice. By integrating key data such as soil type, moisture, temperature, and humidity, the system applies machine learning algorithms to predict the ideal depth for each crop, ensuring better seed germination, growth, and higher yields. This approach minimizes resource wastage like water and energy, empowering farmers to make informed decisions that improve crop productivity, reduce environmental impact, and promote sustainable farming practices. It ultimately contributes to more efficient farming and healthier ecosystems.

# TARGET AUDIENCE

The target audience for the ML-based Smart Seed Planting Depth Prediction System includes farmers, agricultural experts, and agritech innovators who seek to optimize crop production through data-driven insights. This system supports sustainability-focused organizations looking to reduce water and energy usage in farming while enhancing productivity. It also benefits those in precision agriculture, offering a tailored approach to planting crops like wheat, corn, and rice.

Additionally, the system is relevant for researchers in agriculture, environmental science, and forestry working on afforestation and sustainable land management. Government bodies and NGOs focused on reforestation and sustainable farming can use this technology to make informed planting decisions, promoting healthier ecosystems and better forest management.

# OVERVIEW OF OUR TECHNICAL ARCHITECTURE



# THANK YOU