Agentic AI Hackathon: Building Intelligent Agents with IBM Granite and LangFlow

AI-Based Crop Health Monitoring and Advisory System

The Challenge :

Crop health is influenced by multiple factors such as soil conditions, weather patterns, pest activity, and irrigation practices. Farmers often rely on periodic field inspections and experience-based judgment, which may delay the identification of early crop stress. Manual analysis of multi-source agricultural data is not scalable, leading to reduced yield and increased input costs. There is a need for an intelligent assistive system that can continuously analyze crop-related data and provide early insights into potential crop health issues.

Agricultural Data Analysis Agent :

An agent that ingests soil moisture levels, temperature, humidity, crop growth stage data, and weather forecasts, organizing them into meaningful crop health trends.

Risk Trend Detection Agent :

An agent that analyzes short-term and long-term patterns to identify early signs of crop stress, pest risk, or adverse growing conditions using historical data and agronomic thresholds.

Advisory & Best-Practice Assistant :

An agent that generates early alerts and provides agronomy-aligned advisories
(assistive only, non-prescriptive).

Outcome :

Supports early identification of crop health risks, improves farm decision awareness, and promotes sustainable crop management.

Mandatory Tech Stack :

Lang Flow using IBM Granite Model
(Using RAG on agronomy guidelines, crop management best practices, and trusted agricultural references).