

Plant Growth Dynamics:

A Learning Experience

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GitHub: [Plant-Growth-Dynamics-A-Learning-Experience](#)

Introduction

Many people want to grow plants but lack the knowledge to do it right.

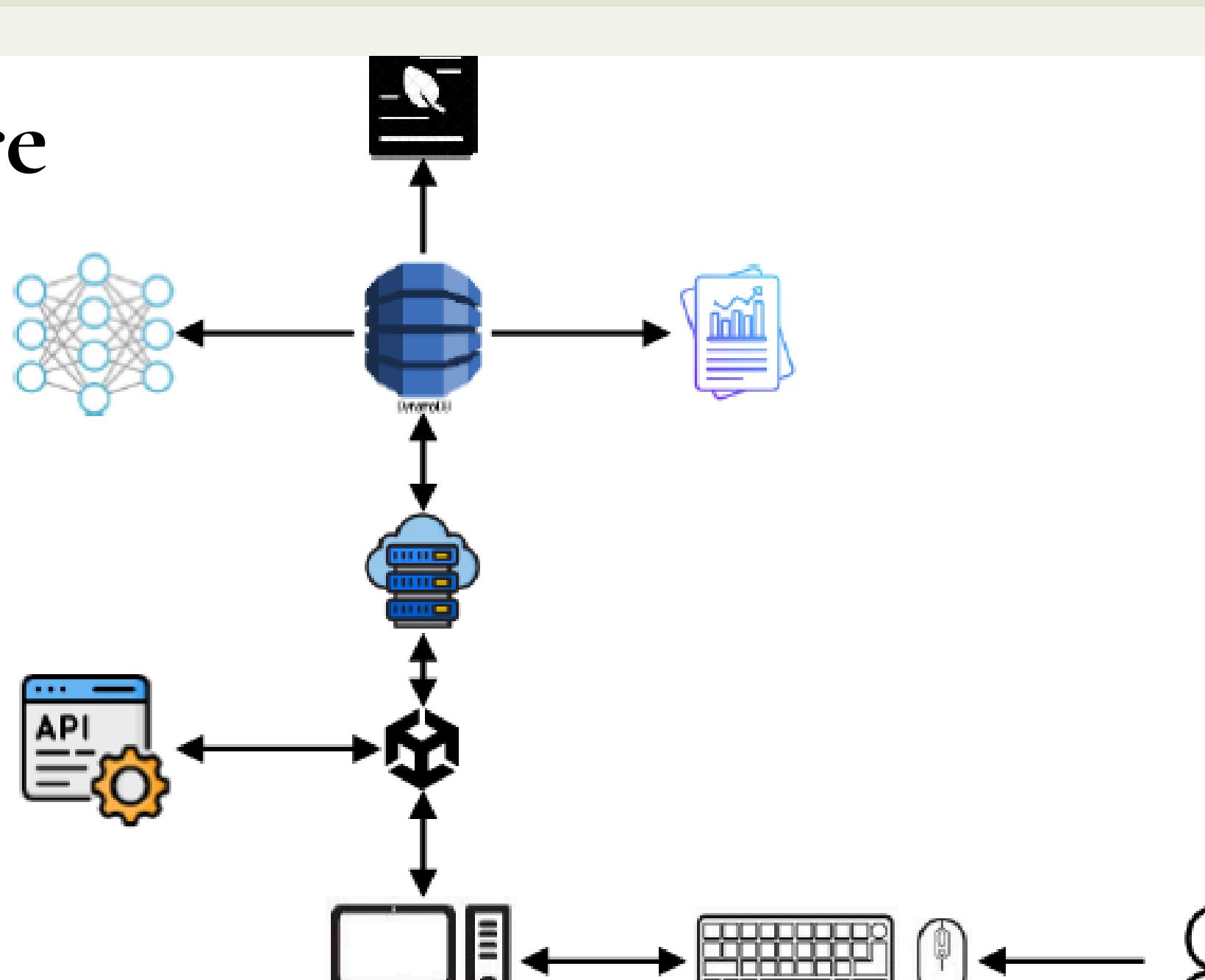
Our game simulates real-life plant care using weather data and AI-based disease detection.

It's a fun and safe way to learn how to grow healthy plants — before trying in real life.



Architecture

Overview



Methodology

- Developed 3D game in Unity (C#)
- Researched plant biology & diseases
- Integrated real-time weather API
- Used ML-based disease detection
- Backend: Spring Boot (Java) on AWS EC2
- Database: DynamoDB
- Client-server sync, optimized with object pooling
- Modular design for easy scaling

Plant Statistics Screen

Shows real-time plant status:

- Moisture – soil water level
- Nutrient – fertilizer level
- Disease – health & treatment
- Tips – care recommendations
- Weather – current & forecast

Helps users understand the impact of their actions.



Results

We successfully developed a functional, fun game with:

- ✓ Real-time weather simulation
- ✓ Interactive gameplay and education
- ✓ Disease identification
- ✓ User progress saving and statistics
- ✓ Full cloud-based backend

