



# Technical Installation Manual

A project for  by  GeekGurusUnion  
Demo 3

12 August 2024

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# Introduction

The AI-Driven Crop Prediction System is a comprehensive solution that applies Machine Learning and AI to analyze weather, soil, and crop data, predicting crop health and yield. The system is divided into two main components: the frontend, built using Nuxt 3, and the backend, powered by Python. To fully configure and run the system, you will need to install several dependencies and configure environment variables. This manual will guide you through the steps to set up the system on both Windows and Linux operating systems.

## User Guide

This section will help users navigate to and use the website effectively.

1. **Open Your Web Browser:** Launch your preferred web browser (e.g., Chrome, Firefox, Safari).
2. **Enter the Website URL:** In the address bar at the top of your browser, type the following URL:  
<https://terrabyte.software>
3. **Press Enter:** After typing the URL, press the Enter key on your keyboard to navigate to the website.
4. **Log In (if required):** If authentication is required, enter your username and password. If you don't have an account, follow the sign-up instructions provided on the website.
5. **Navigate the Application:** Once logged in, explore the website's features and functionalities. Use the navigation menu to access different sections.
6. **Get Help:** If you encounter any issues or need assistance, refer to the Help section on the website or contact support at [terrabyte.app@gmail.com](mailto:terrabyte.app@gmail.com).

## Developer Guide

### Prerequisites

#### General Requirements

Before installing the system, ensure you have the following software installed on your machine:

1. **Node.js:** Version 18.18.0
2. **Pnpm:** Version 9.4.0 (for managing frontend dependencies)

3. **Python:** Version 3.10.8
4. **Pip:** Version 24.0 (The Python package installer, included with Python)

## Frontend Prerequisites

1. **Google Cloud Console:** Create a project to obtain a Google Maps API key.
2. **Supabase:** Set up a project to manage your database and obtain the URL and API key.

## Backend Prerequisites

1. **Supabase:** The backend requires the Supabase URL and API key for database operations.
2. **OpenWeather:** Obtain an API key from OpenWeather for fetching weather data.

## Software Installation Guides

For each prerequisite, follow the installation guides appropriate for your operating system:

- **Node.js:** [Download and Install Node.js](#)
- **Pnpm:** [Download and Install PNPM](#)
- **Python:** [Download and Install Python](#)
- **Pip:** [Pip installation guide](#)
- **Google Cloud Console:** Create a Project and Get an API Key -> [Google Cloud Console](#)
- **Supabase:** Set Up Supabase Project -> [Supabase](#)
- **OpenWeather:** Get an OpenWeather API Key -> [OpenWeather](#)

## Installation

### Cloning the Repository

Start by cloning the main branch of the repository to your local machine:

```
git clone https://github.com/COS301-SE-2024/Crop-Prediction-System.git
```

### Frontend Installation

1. Navigate to the Frontend Directory:

```
cd frontend
```

2. Install Pnpm using curl:

```
curl -fsSL https://get.pnpm.io/install.sh | env PNPM_VERSION=9.40 sh -
```

3. Install Frontend Dependencies:

```
pnpm install
```

4. Configure Environment Variables: Create a `.env` file in the frontend directory and add the following variables:

```
GOOGLE_MAPS_API_KEY = your_google_maps_api_key  
SUPABASE_URL = your_supabase_url  
SUPABASE_KEY = your_supabase_key  
API_BASE_URL = http://localhost:8000
```

## Backend Installation

1. Navigate to the Backend Directory:

```
cd backend
```

2. Installing pip:

```
python -m ensurepip  
python -m pip install --upgrade pip==24.0
```

3. Install Backend Dependencies: Install the required Python packages listed in the `requirements.txt` file:

```
pip install -r requirements.txt
```

4. Configure Environment Variables: Create a `.env` file in the backend directory and add the following variables:

```
SUPABASE_URL = your_supabase_url  
SUPABASE_KEY = your_supabase_key
```

```
OPENWEATHER_API_KEY = your_openweather_api_key  
GEMINI_API_KEY = your_gemini_api_key
```

## Deployment/Running

### Running the Frontend

Start the Nuxt Development Server:

```
pnpm run dev
```

1. The frontend will be running at <http://localhost:3000>.

### Running the Backend

Start the FastAPI Server:

```
uvicorn app:app --reload --host 127.0.0.1 --port 8000
```

1. The backend will be running at <http://localhost:8000>.

### Running Tests

#### Frontend Tests

To run the frontend tests:

```
pnpm run test
```

#### Backend Tests

To run the backend tests:

```
python3 -m pytest
```

## Additional Resources and Guidelines

### Development Workflow

- **Branching Strategy:** We are using Git Flow as the branching strategy for this project.
- **Code Style Guidelines:** [Coding Standards](#)

### Documentation and Resources

- Additional Documentation:
  - [GitHub Wiki](#)
  - [User Manual](#)