

**MIT Academy of Engineering**  
**School of Computer Engineering and Technology**  
**Major Project Activity-3**  
**Requirement Analysis**

---

**PROJECT DETAILS**

<b>Project Name</b>	Implementation of Wireless Sensor Network for soil NPK analysis using Cubic Spline Method.
<b>Project Group ID with Name</b>	Project ID:36  1. Mangesh Gund 2. Chaitanya Barsawade 3. Prashant Walunj 4. Arjun Yachwad

**2. Project Overview and Background**

Agriculture plays a significant role in the economic development of India; therefore, we need to carry out new technologies for Precision Agriculture. Manual methods for soil analysis give inaccurate values because there is a difference between soil samples at the field and measuring in the laboratory with technologies. In India, it is required for automated distribution of fertilizers and technologies because most of the farmers use traditional types of farming, which gives less amount of productivity concerning intense hard work and efforts. The productivity of India is less as compared to other countries. To enhance productivity and profit margin, the adaptation of new technologies can help us to a great extent. So, this paper is based on a survey of Wireless Sensor Network because these technologies are useful for the quality and standard of agriculture. This paper presents the study of Wireless Sensor

Network that can be suitable for agriculture for automated farming. This paper will suggest the farmers make the proper choice, obtain superior output, and be economically strong.

## 2.1 Project Dependencies

- **Software –**
  - NET BEAN v8.0.2
  - Windows 8,10/Linux
- **Hardware –**
  - NPK Sensor nodes
  - AT Mega 232 micro controller.
  - Arduino Uno
  - Zigbee serial communication

## 2.2 Stakeholders

The following comprises the internal and external stakeholders whose requirements are represented by this document:

	Stakeholders
1.	<b>Farmers:</b> Project based on agriculture so our main stakeholders like farmers which are able to make proper choices, get better crop yield and be economically strong.

### 3. KEY ASSUMPTIONS AND CONSTRAINTS

---

#### Key Assumptions and Constraints

#	Assumptions
	User details must be present in the dataset.
	Users should enter crop details.
	Users should update sensor value on their respective system.
#	Constraints
	We will provide NPK values only.
	System range should be in range of 4-5m only.
	System cost should be high.

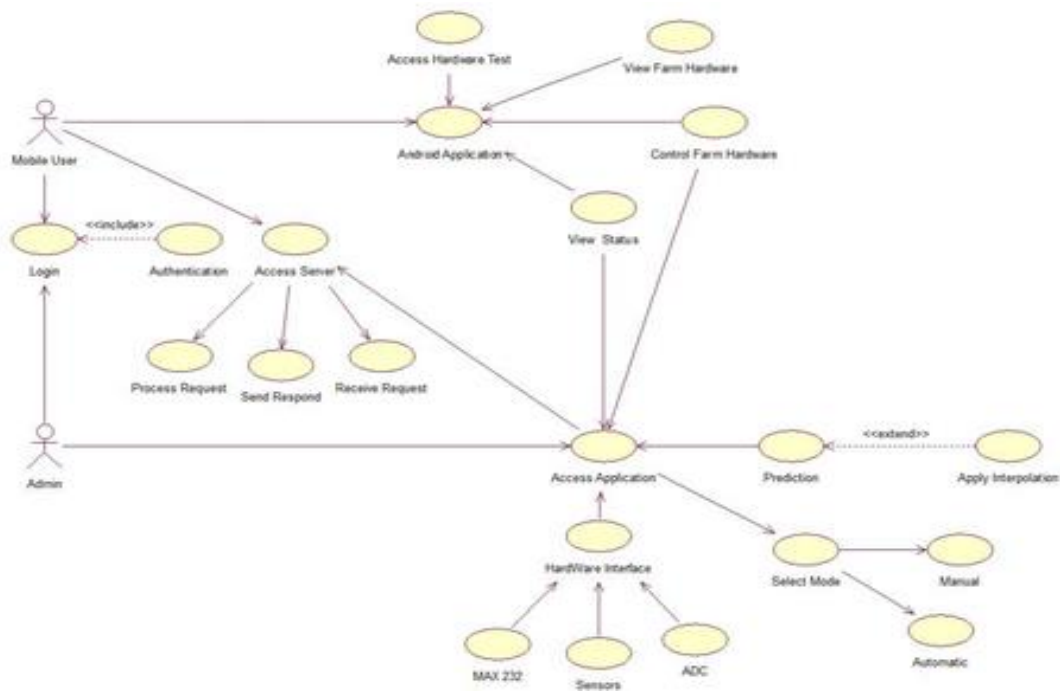
#### □ Eliciting requirements

- The system should throw the fault & error
- User Interface (UI) should be user friendly.
- Dataset should be updated as per reading taken on the field.
- System Should provide a precious value of NPK.
- Results from the system should be in minimum period of time.

## □ Analyzing requirements

- Incomplete explanation of requirement. Level- Medium
- Good GUI must be designed. Level- High
- The WSN network should be good. Level- Low
- Ambiguous with respect to time. Level- Low

## Use Case Narrative



### □ **Review and retrospective**

- One of the prime reasons for this WSN network is to monitor physical and environmental conditions like pressure, temperature, sound and vibration etc. are used to send data to the main location through various nodes. Base station and nodes act like an interface between users and network.
- There are also limitations in WSN like costs, fault tolerance, scalability, and sometimes power consumption.