IOT Enabled

Smart Farming Applications

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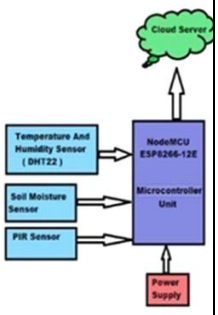
	PNT2022TMID0600 4

Literatur

e Survey

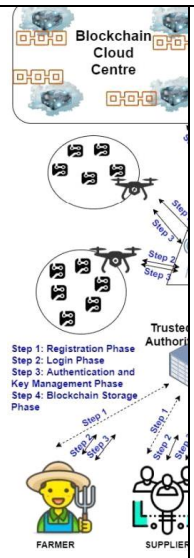
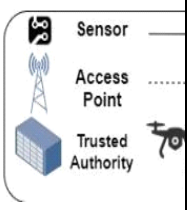
[illegible]	Bloc	Algo	Output	Features	Drawbacks

	k **D** **i** **a** **g** **r** **a** **m**	**r** **i** **t** **h** **m** **/** **S** **o** **l** **u** **t** **i**			

		o **n**			
1		**Hardware Requirements** • Soil moisture sensor, DHT22 sensor, HC-SR501: PIR sensor are used to detect temperature, pressure and motion of the object. • NodeMCU ESP8266-	• The process of irrigation is one of the most time-consuming ac	• Accuracy • Cost efficient • Easy programmed	• Soil Humidity • Cannot be monitoring plants for 24/7 • Climate detection • Wat

		12E are used in IOT platforfm. **Software Requirements** • Ardunio IOT is used for programmingin C. • Thing Speak Cloud Platform is used to store data	tivities in farming. • IoT technology made the monitoring of		er level detection

			agricultural parameters are easier, automatic, effective and real time. • Various sensors the		

7 2	 	**<u>Agriculture Monitoring:</u>** • ***Air monitoring:*** The air will be monitored. • ***Soil monitoring:*** The soil fertility, humidity etc ca	• In this paper, a system atic survey	• Cost efficiency. • Multiple problems are resolved. • Accuracy level	• Power consumption is very high. • Machine

		n be m on ito re d. • ***Water monitoring:***The water levelcan be monitored. • ***Livestock monitoring:*** Sensors that are placed on animals allow to check if any damage is impending on the crop due to animal livestock. ● ***Irrigation Control***:	h a s b e e n c o n d u c t e d o n t h e u s a g e a	• Green house model is implemented at a lower cost. • Air, soil, wate	r r o r s c a n h a p p e n . • The e c h a n g e s o c c u r

		The water can be minimized. • ***Plant***	nd application of blockchain technology in smart agriculture in providing	r, livestock, irrigation, plant, fertilizer and pesticides, illumination can be controlled.	when any of the c

		Monitoring: The plant can be monitored 24/7. • ***Fertilizer and*** The fertilizer and	security goals. • A thorough analysis has been		• There placement of the failur

		pesticidescan bemonitored. • ***Illumination Cont***	made on the security attributes, app		ecompponentstakes

		rol: Proper sunlight is used for p	lication areas, advantages, drawba			

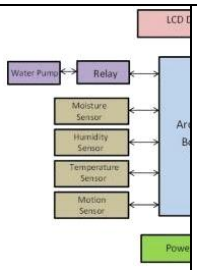
		l a n t ’ s g r o w t h . **Controlled Smart Greenhouse:**	c k s , a n d c o s t s o f c o m p u t a t i o n a n d co		

			m mu nic ati on inv olv ed in the con sid ere d exi stin g co mp eti ng sch em es. • T h i s s t u d		

			y has led to identification for		

			future directions for some open and challenging problems to w		

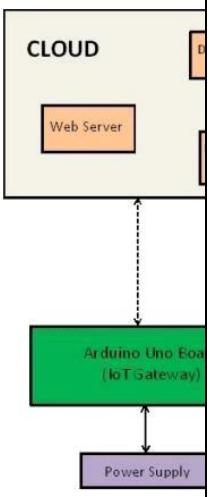
			ards which the research should be propelled.			
		• The artificial environment is used for plants growth with the help of greenhouse				
5.		• This method is	• IOT	• Easily impl	• Ani	

Hardware block diagram **A** **n** **d**		used to monitoring these problems • Temperature • Humidity • Sunshine • Wind speed • Passive infrared sensor • Seed monitoring • pesticide • He is then allowed to select the crop for that season. System is implemented	based smart agriculture system scan prove to be very helpful for farmers since over	• Less time to assemble the compo	mals invading areno tmonitored. • The clim

r **o** **i** **d** **A** **p** **p** **li** **c**	nt in 3 ways. • Sensing • Processing • Information distribution • The method was carried out using an Arduino board using IOT. The crops can be monitored, maintained and solved the	well as less irrigation is not good for agriculture. • Threshold values for climatic conditions like humidity, temp	nents. • Android a • Cloud ap	ation. • The main	atic chang es are not anal ysed.

a **ti** **o** **n** **I** **O** **t** **I** **m**	problems automatically. • The seed can be monitored, wind speed, humidity, temperature and pesticides can be monitored.	era tur e, mo ist ure can be ixed based on the environmental conditions of that	p li c a ti o n i s u s e d i n s m a r t a g r i c u lt u r e . • Mo nit	wate r cons ump tion, that is the irrig atio n leve l of	w a t e r , i s n o t

	p **l** **e** **m** **e** **n** **t** **a** **ti**		n . • The system also senses the invasion of animals which is a prim	oring can be done in mobile phones	• Plants damage and plant growth are not moni to

	o **n**  		• This system generated		red. • The soil fertility is not monitored. • The rain water storag

			tes irrigation schedules based on these sensed real time data		e is not filled i t t a

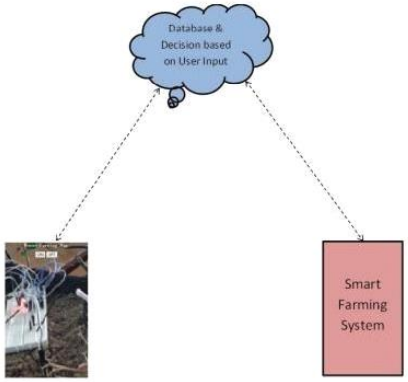
			from field and data from the weath		

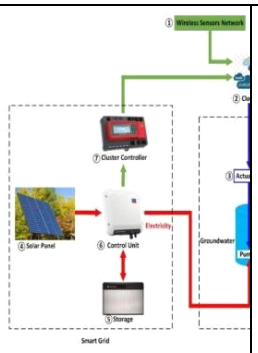
			er repository. • This system can recommend farmer whether or not, is there a		

			need for irrigation. • Continuous internet connectivity is required. This can be overcome by extendingthe system to send suggestion via SMS to		

			the farmer directly on his mobile using GSM module instead of mo		

			bil e ap p		



 **Testbed General Architecture Data**	**IOT based Smart Farming** • Using renewabl	• This paper developed, present	• Accuracy Level. • Usage of renewable resources	• Sometimes renewable resources may get failur

flow from sensors to cloud Deployed System Control Flow Diagram	e resources the agriculture problem	ed, and deployed an open source and easy-to-deploy smart agriculture system with the costeffectiveness	our ces. • External power consumption can be prohibited. • Automated	e. • The software can also get failur

		ms can solved. • The renewable resou	, water consumption optimization, and renewable energy integration. • The deployed SA system leverages up-to-date ICT. We used IoT devi	process. • Reduces human power. • Cost efficiency. • Easy implementation.	ed. • The hardware components scan als

		rces like rain water, solar power,	ces for data acquisition and control. • We also used Cloud Comp		o get damaged. • The pests and pesti

		wind power etc are used. • There are not monitored. • Soil fer	uting for data processing, visualization, and data storage. Besides, we		cides are not

		a t e r h a r v e st i n g is u s e d f o r ir ri g a ti o n p u r p o s	recurre d to fuzzy logic to imple ment a fuzzy irrigati on control unit that decide s on the approp riate Id based on real-time proces sed data. • T hi s a p pr o a c		t i l i t y is n o t m o n i t o r e d . • T h e s y s t e m

		es and the solar panels are used for collecting the solar energy and replacing the use of electricity. • The	has saves water and energy and provides adequate condi		errors are made.

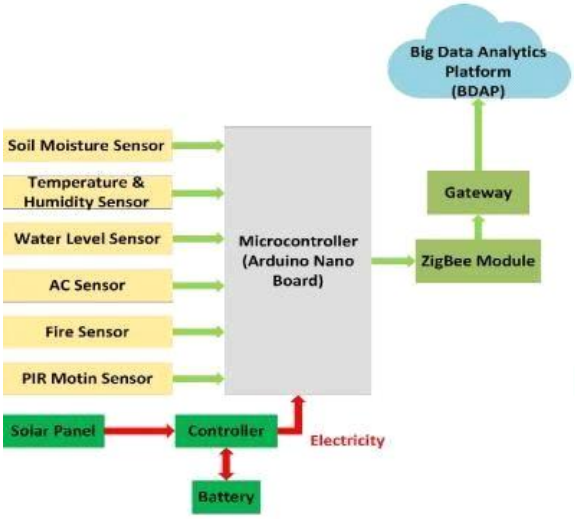
		fire, AC, PIR, water level, temperatu	tions for the plants, thus optimizing crops' yield. • Furthermore, this allows better		

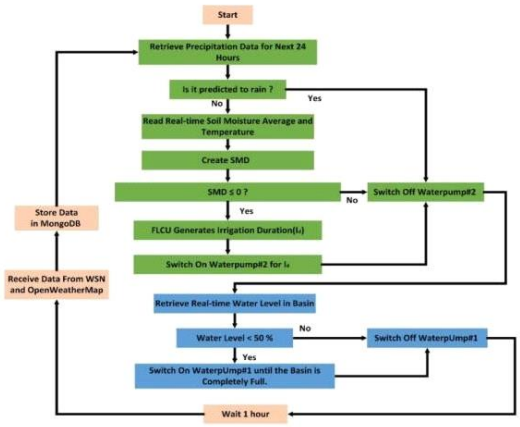
		re, humidity, soil moisture sensors are used in smart agriculture. **SYST**	monitoring for the water level in the basin and adheres to the conventiona		

			l eco-friendly trend of sustainable agriculture through its total reliance on solar energy.			
		• Data Acquisition • Big				

		Data Analytics Platform • Wireless Actuator Network • Rene			

		wable Energy • Storage Unit			





		• Control Unit • Cluster Controller	• Its ability to reduce water/energy consumption by 71.8%		