

# Survey on Technical Farming

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**Abstract :** Smartphones are very effective tools for increasing their power and capacity, smartphones allow end users to perform several tasks and be always notify about their updates . API are made to efficient and useful data that is to be provided to the farmers, for better understand the information of weather forecast in regional language. "Traditional to Technical Farming " provides tool for farmers with all the information about land, crops management, profit that they can make by growing a particular crop on their land, to increase productivity by proper use of Fertilizers. TTF, is one such application that can bridge the gap and it helps to provide the farming community with better solutions for the proper management of their land, crop management, proper use of fertilizers , diseased plants in better manner by taking "SOIL TEST" .

**Keywords:** Android smartphones, E-farming, Robotic farming, Water saving with greenhouse farming, Traditional To Technical Farming, soil test.

## I. INTRODUCTION

Android is a mobile operating system (OS) developed by Google, based on the Linux kernel and designed primarily for touchscreen mobile devices such as smartphones and tablets. This Android system consists of 4 layers: the Linux kernel, native libraries, the virtual machine, and an application framework. In this android architecture Linux kernel provides basic operating system services and hardware abstraction to the upper level software stacks. The Native libraries provides functionalities of web browsing, multimedia data processing, database access, and GPS tracking optimized for a resource-limited hardware environment. The Virtual Memory runs Java code with low memory acceptance. At the top layer of the Android architecture provides a component-based programming framework because of that user can easily build their own applications.

TTF, is one such application that can bridge the gap and it helps to provide the farming community with better solutions for the proper management of their land , crop management, proper use of Fertilizers , diseased plants in better manner, by not much use of water but still increase production in greenhouse farming, sensors based farming, robotics farming In India and other countries, the situation of the farmer is becoming worse day by day. Overall they contribute more than 50% of the crop that is eaten in the world but still they are not rising. The matter of great concern is that there exists wider gap between the proportion of the technologies generated by the public agricultural research system and technologies adopted by the farmers in India. One of the vital reasons for such wide gap is due to the lack of an appropriate extension/technology transfer model in agriculture that

could establish better linkage between scientists and farmers in order to facilitate effective dissemination in a timely manner. Hence there is a need to develop suitable approach for technology transfer in agriculture In order to bridge the gap between the technologies and the farming community. API are made to efficient and useful data that is to be provided to the farmers, for better understand the information of weather forecast in regional language.

## II. LITERATURE SURVEY

### A. E-FARMING SYSTEM :

In System farmer get crop information along with weather information ,diseases & its solution , market update, expert-advice. E-farming is the web application that will help the farmers to perform the agro-marketing leading to achieve success and increase in their standard of living. The Marketing facility would allow the farmers to have a view of the bills created and the related information in their accounts. An Authorized-agent would serve as a way for the farmers to sell their products in the market. The Centralized market committee will have control on the Agents through business review.

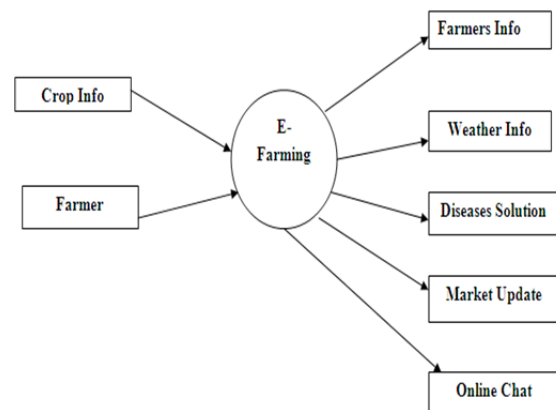


Figure1: System Work E-Farming[1]

### Advantages –

- This project will be helpful for farmers to know more about market information; will act as unique interface of schemes and compensation.
- Through this they will be always in touch of new technique and trends of farming.
- Overall this system is faster, secure and comfortable[1].

### Disadvantages –

- Use feel some stress about its use.
- It requires internet on mobile with its knowledge.

**B. Control of Farm Tractors :**

This topic presents a method to utilize a cascaded extended Kalman filter to estimate the slope of the dc gain  $M_{dc}$  of the steer angle to yaw rate transfer function with respect to the velocity of the tractor.

As shown in Fig. 2, the lateral forces on the front tire, rear tire, and hitch are defined as  $F_f$ ,  $F_r$ , and  $F_h$ , respectively. The distances from the center of gravity (CG) to the front tire and rear tire are defined as  $a$  and  $b$ , and the distance from the rear tire to the hitch is  $c$ . The lateral and longitudinal velocities at the tire define the front, rear, and hitch slip angles that are shown in Fig. 2 as  $\alpha_f$ ,  $\alpha_r$ , and  $\alpha_h$ , respectively. Also depicted in the figure are the longitudinal velocity ( $V_x$ ), lateral velocity ( $V_y$ ), yaw rate ( $r$ ), and steer angle ( $\delta$ ). The heading angle ( $\psi$ ) is the angle between the North direction ( $N$ ) and the tractor's longitudinal direction. The sideslip ( $\beta$ ) is the angle between the longitudinal and lateral velocities. The course angle ( $\nu$ ), the angle provided by the GPS velocity measurement, is the heading angle ( $\psi$ ) plus the sideslip ( $\beta$ ). An analytical model of the dynamics of the three-wheel system shown in Fig. 2 can be developed assuming that the lateral forces are linear to the slip angles at the front and rear tire and the implement. The derivation of this analytical model shown using a state-space representation, as shown.

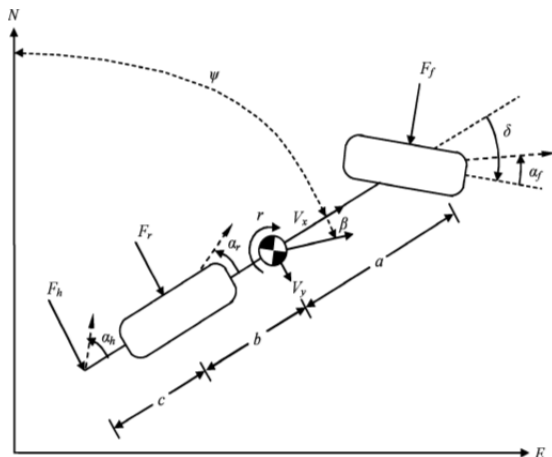


Fig.2. Bicycle model with a force and moment.[2]

**Advantages –**

- The steering dynamics of a farm tractor can be identified online for adaptive control strategies also for different implements and provide faster updates of states required for the feedback control algorithm.
- Saving the manpower and timing.

**Disadvantages –**

- For short farms its not useful.
- Proper work is not done as per done by human.

**C. E-Nose Farming System :**

An electronic nose based network system is developed for monitoring out doors in farms remotely. This network is built to measure out door environmental conditions such as temperature of green house, wind speed, humidity of green

house, moisture. It is placed at various locations and around the farm, and the collected out door data are transmitted via wireless network to a computer server, where the data processing algorithms uses and to analyze the data. The developed e-nose network system enables more effective out door management system for experimental and simulation results demonstrate the effectiveness of the developed system.[3]

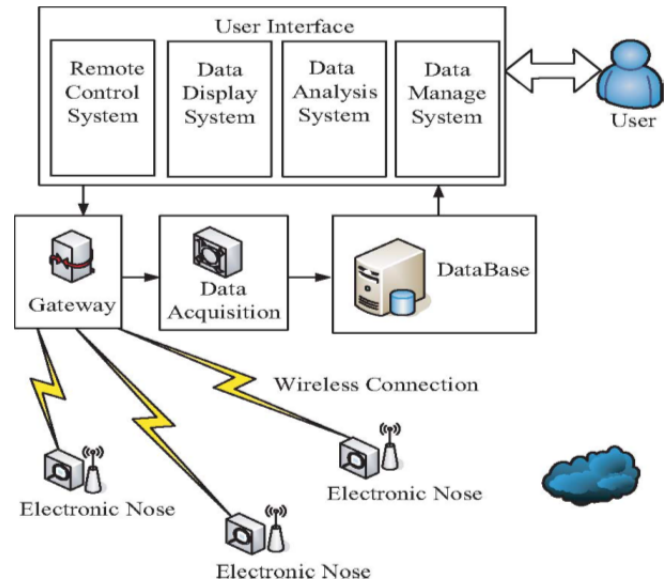


Fig. 3. Architecture of the developed wireless e-nose network[3]

**Advantages –**

- The proposed e-nose network approach can automatically monitor livestock farm odors, and have many potential industrial applications.
- This system can perform remote multipoint odor monitoring.
- Integrated software suite provides data analysis capabilities that would assist users' decision making on odor control practice.
- It enables more efficient out door control capabilities by providing automated, robust etc..

**Disadvantages –**

- If a single sensor not working then all system remains off.
- Take away from children's and also from animals.

**D. Water Savings with Greenhouse Farming :**

Greenhouses can help farmers to reduce spoiling and increase productivity of profits in flowers. It require less water than open air system. Estimation on water savings from 10 to 100% and fail to clearly such as the irrigation method, size of the greenhouse, or climatic conditions. In this article focuses quantity of water savings in small-scale greenhouses. It involves test methodology such as simplified pan evaporation measurement used with the Penman-Monteith and Hargreaves equations. Data used in this such as air temperature, humidity, wind speed, and loss of water inside and outside the greenhouse. The water savings within greenhouses are around 60-90% Showed in

result. This significant reduction in water consumption allows for agricultural as well as horticultural production in arid and semi-arid regions that make up over 70% of the land in several countries.[4]

Advantages –

- Greenhouses are appealing to farmers for their increased crop fields and their growth capacity.
- The water savings from greenhouse farming. .

Disadvantages –

- Initial cost is high.
- Need to take observations carefully.

#### E. Robotic Farming :

In high quality agricultural production real-time control is becoming part of modern machine systems. Maintaining high quality agricultural production with growing labor shortages is a big challenge. Work place for labors and safety requirements is also a challenge. Energy and soil management also motivated real time applications. Control systems and Sensors can be reduce labor requirements, such functions in environment. Labor shortages and environmental constraints coupled are the big issue in farming and industries. In this paper presents a review of recent advances development of sensors and controllers for agricultural applications.[5]

Robotic farming systems will be driven toward productivity and sustainability objectives by state variable information. Much information will likely come from maps (GIS databases) and from “smart soil” sensors. Real-time control concepts, GIS capabilities and GPS systems, coupled with site-specific farming concepts represent the current springboard for advances toward the robotic farming vision.

Advantages –

- This applications can improve environmental and energy management.
- Robotic farming may reduce labor requirements and improve working conditions.
- Spatial variation of soil chemical and physical properties is becoming increasingly well documented.
- This coupled with continuing labor shortages, environmental constraints, safety and health constraints and the drive toward increasing food quality.
- Energy and compaction management issues also have economic and sustainability implications.

Disadvantages –

- Machineries handling is not easy.
- The cost required for robotic farming is more.

### III. CONCLUSION

This paper is useful for farmers as it includes the methodologies used before. Hence we studied all Survey papers related to technical farming.

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#### REFERENCE

1. Sindhu M R “E-Farming”IJCSIT Vol. 3 (2) ,pp.3479-3482S, 2012.
2. Evan Gartley and David M. Bevely “Online Estimation of Implement Dynamics for Adaptive Steering Control of Farm Tractors” vol. 13, No 4, August2008.
3. Leilei Pan and Simon X. Yang “An Electronic Nose Network System for Online Monitoring of Livestock Farm Odors” Vol. 14, No. 3, June 2009 371.
4. Kelsey A. Czyzyk, Shayne T. Bement” Quantifying Water Savings with Greenhouse Farming” University Park, PA 16802.
5. Takoi K. Hamrita, E. W. Tollner, and Robert L. Schafer” Toward Fulfilling the Robotic Farming Vision: Advances in Sensors and Controllers for Agricultural Applications” Vol. 36, No. 4, July/August 2000.
6. Agricultural Price Policy and Development: Some Facts and Emerging Issues., Presidential Address, Indian Journal of Agricultural Economics, 52(1).
7. N.L. Agarwal (2004), Agricultural Marketing in India,4th edn, Oxford and IBH, New Delhi