

Detection of grapes Disease(Downy Mildew)Based On IOT and Image Processing

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Abstract

Become an agricultural country, 70 percent population of India depends on agriculture. Information and communication technology is placed a main role in agriculture sector. India is an agro-based economy hence farmers experience a lot of problem in detecting and preventing diseases. So there is a necessity in detecting diseases which proves to be effective and convenient for researchers. We come with the new idea based on image processing to detect plants leaf diseases. Our aim is to identify, detect, and to accurately measure the symptoms of disease. If the plant is affect by any disease then immediately alert message is sent to the farmer and we are specifically focused on 'Downy Mildew' disease which affect grapes leaves. The proposed system is very sensitive and accurate method in the detection of Downy Mildew diseases, which will reduces the losses and gaining the economical profit. Here camera is used to surveying the farm land and growth of the particular plant of grapes.

Keywords: agriculture country, agro-based economy, farmers, diseases, image processing, Downy Mildew, grapes leaves

I. INTRODUCTION

Farmer has wide range of diversity to select suitable fruit and vegetable crop. Research on detection of plant disease is more important now a day, which is useful in monitoring large fields. Grapes are an important fruit crop in India. After citrus and banana, grapes are the third most widely cultivated fruit. It is one of the most delicious and nutritious fruit. Grapes are widely consumed as fresh fruit in India. It is also used for producing raisins, wine, marmalades, juice concentrate, beverages, juice, squash and jams. In India About 60 percentage of grape are cultivated under rain feed condition. Farmers do the naked eye observation and judge the diseases by their experience. But this is not accurate and proper way. To ease the solve problem, we are designing a system to detect the disease on grapes.

NEED OF THE SYSTEM

As we know it takes a lot of time and effort to transport water over long distances efficiently. You don't want to spend hours spending the suppliers and trying to figure out who is trusty. We pay approximately 600rs for 10000 liters in local areas. It should be cost efficient and quality of water should be maintain In India About 60% of grape are cultivated under rain feed condition. Now days there are several diseases seen on the plants. For increasing production and quality it is important to control such a harmful diseases. For controlling grapes disease it is necessary to detect a specific disease. Grapes Diseases cause a major economic and production losses. Every year downy mildew disease results in huge loss of farmers. India has large count of uneducated farmers. To get correct information about downy mildew, they require expert advice. But it is impossible for expert to reach at each farmer. Even if they got expert, expert uses naked eye observation. But naked eye observation has very less accuracy that's why accurate and sensitive automated system is required to detect Downy Mildew. Judge the diseases by their experience. But this is not accurate and proper way. To ease the solve problem, we are designing a system to detect the disease on grapes using image processing.

II. LITERATURE SURVEY

2.1 History:

Grapes are the third most widely cultivated fruit. It is widely consumed as fresh fruit in India. It is used for various products. It also provide live hood to about 65 million people and is an important agricultural commodity providing remunerative income to millions of farmer in developed as well as in developing country. About 60 percentage of grape are cultivated in India is under rain feed condition . There are many kinds of grape diseases that thrive in all sorts of conditions. Bacteria and fungi cause the most common grapevine diseases. Insects can also spread disease and damage roots. Environmental conditions can trigger fungi development that wreaks havoc on grapevines in vineyards.

2.2 Traditional Methods:

There are various methods used to control this disease such as spraying chemicals, Drip watering systems etc. Enclosed environments, such as houses or greenhouses, aid in reducing humidity and thus reducing the chance of this mildew from harming the grapevines. But this all can be applied after detection of disease and detection takes long duration of time hence we are mainly focusing on detection of downy mildew.

Nivedita R. Kakade, Dnyaneswar D. Ahire proposed a image-processing-based solution for the automatic leaf diseases detection and classification. To diagnosis the disease, an image processing system has been developed to automate the identification and classification of various disorders.

III. Working

Given diagram explains implementation of system in short. In this system camera send images of plant's part where disease occurs to the system software. System analyze the leaf and the matches it with trained image stored in database. If image matches it gives notification to user that 'disease detected'. In this system we can also see the prevention for respective disease.

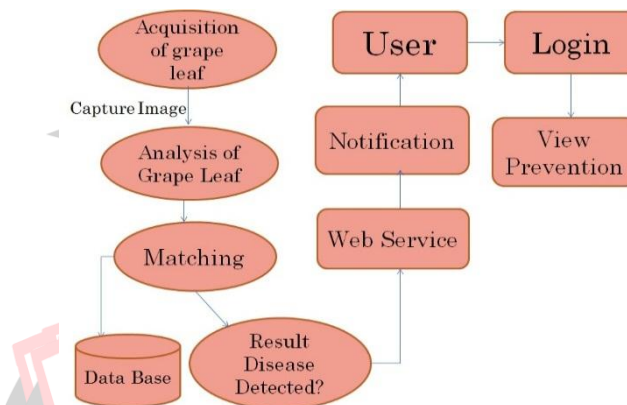
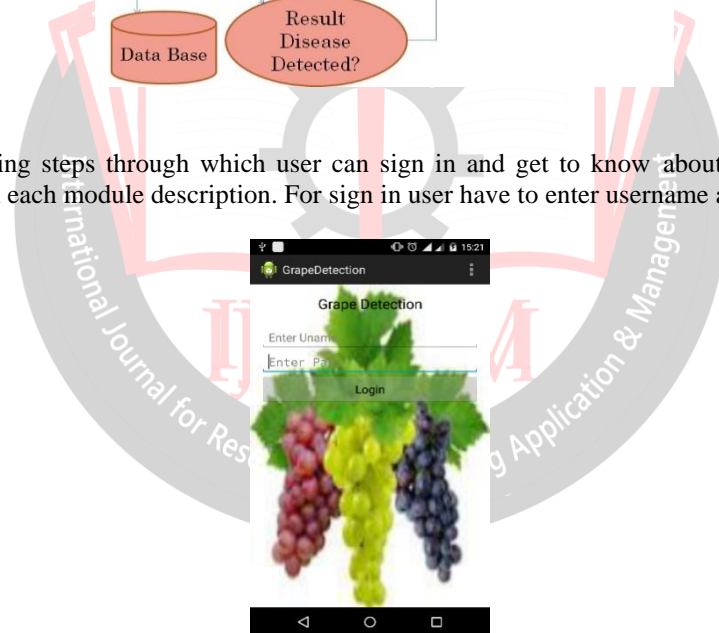


Fig: 1 System Architecture

3.1 User Interface

User have to perform following steps through which user can sign in and get to know about disease detection. The sign in process is given in figure with each module description. For sign in user have to enter username and password only.



After login farmer can see disease detected message and below it prevention button which contains precautions of respective disease.

Mathematical Model:

$S = I, O, P, C$

where,

S = System

I = Input

O = Output

P = Processing

C = Constraint

$I = \{ \text{Images} \}$

O = {Disease Detection, Prevention}
P = {Image Capturing, Image Extraction, Image Matching}
C = {Image matches or not}

IV.ALGORITHMS

System have following module

4.1 for user :

Sign Up Sign In

Disease Detection

View Prevention

4.2 for admin :

add prevention

update prevention

Algorithm Grapes()

```
{  
    Admin();  
    User();  
}
```

Algorithm Sign Up()

```
{  
    mobile<- Enter mobile No;  
    name<- enter name;  
    city<- enter village or city name;  
    if(isEmpty(mobile)orisEmpty(name)orisEmpty(city)  
    {  
        Message("Fill All Credential");  
    }  
    elseif(Exists(mobile))  
    {  
        Message(Number already registered);  
    }  
    else  
    {  
        Message(User Created Successfully);  
    }  
}
```

Algorithm DetectDisease()

```
{  
    if(Input(image)==Trained(image))  
    {  
        Message("Disease detected : Train(image).diseaseName");  
    }  
    else  
    {  
        Message("No Disease Found");  
    }  
}
```

Algorithm viewPrevention()

```
{  
    if(disease detected)  
    {  
        if(MessageClick("View Prevention"));  
    }  
    Message("Prevention");  
}
```

```

else
{
    Return(0);
}
}

Algorithm addPrevention()
{
    Add(Prevention);
}

Algorithm updatePrevention()
{
    Update(Prevention);
}

```

CONCLUSION

We are detecting downy mildew disease on grapes in our proposed we are implementing how to preventing downy mildew disease and also notification on detection on downy mildew disease. Downy mildew is a disease of the foliage, caused by a fungus-like () organism. It is spread from plant to plant by airborne spores. It is a disease of wet weather as infection is favored by prolonged leaf wetness. Downy mildew disease is measure issue for all farmers. Our proposed system will help to our farmer to detect Downy mildew disease and to take prevention on it .these is very innovative and smart application and also providing alert on it. Downy mildew occurs in cool, moist weather usually in early spring or late fall. We successfully completed the documentation required to develop our proposed system and have also learned various aspect of systems including existing system through preliminary review.

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