

A SURVEY ON KNOWLEDGE BASED SYSTEM FOR FRUITS

**S.R. Kalaiselvi, Asst.professor,
Department of Computer Science
Dr. N.G.P. Arts and Science College.**

ABSTRACT

Pineapple is the second harvest of importance after bananas, contributing to over 20 % of the world production of tropical fruits. Nearly 70% of the pineapple is consumed as fresh fruit in producing countries. Pineapples may be cultivated from a crown cutting of the fruit, possibly flowering in five to ten months and fruiting in the following six months. Pineapples do not ripen significantly after harvest. In 2016, Costa Rica, Brazil, and the Philippines accounted for nearly one-third of the world's production of pineapples. Pineapple damage is not taken quickly; it can lead to damage in the Pineapple. The objective of this system is to find the appropriate diagnosis of disease and the correct treatment. Methods: In this paper the design of the proposed Expert System which was produced to help Fruits Agricultural Specialist in diagnosing many of the Pineapple diseases such as : Phytophthora heart (top) rot, Base (butt) rot or Fruit let core rot (green eye, Pineapple Sprain, Turf Toe, Pineapple disease , Plantar Fasciitis, Warts, Bunion, Rheumatoid Arthritis, Gout, Heel Spur, Athlete's Pineapple , The system study presents an overview about Pineapple diseases are given, the cause of diseases are outlined and the treatment of disease whenever possible is given out. CLIPS Expert System language was used for designing and implementing the proposed expert system.

INTRODUCTION

Fruit segmentation system was primarily developed for robotic fruit harvesting. However, this technology can easily be tailored for other applications such as on tree yield monitoring, crop health status monitoring, and disease, segmentation, maturity segmentation and other operations which require vision as a sensor. Pineapple (*Ananas comosus*) is a herbaceous perennial, which grows to 1.0 to 1.5 m (3.3 to 4.9 ft) tall, although sometimes it can be taller. In appearance, the plant has a short, stocky stem with tough, waxy leaves. When creating its fruit, it usually produces up to 200 flowers, although some large-fruited cultivars can exceed this. Once it flowers, the individual fruits of the flowers join together to create what are commonly referred to as a pineapple.

IDENTIFYING FRUIT COLOR

In the study of Color-based for Tree Yield Fruits Image Counting they used the local or color based analysis for rapid fruit segmentation and was able to detect the fruit at specific maturity stages i.e., fruit with a color different from the background. The on-line estimation of oranges, peaches and apples regarding the quality attributes like size, color,

stem location and segmentation of external blemishes was presented. Research and development in robotic tree fruit harvesting has been a major focus in recent years because of decreasing supply and increasing cost of human labor. One of the major tasks of a fruit harvesting robot is to identify or detect fruit in tree canopies. Machine vision-based fruit identification is also important for accurate crop-load estimation for crops such as apple and citrus. This system presented an automatic segmentation and yield calculation of fruit based on shape analysis. The color and shape analysis was utilized to do the segmentation of the fruits in an input sectional tree image. The images used in our work were of different tree images of variety of fruits like apple, pomegranate, orange, peach, litchi and plum. The input color image was first converted from the RGB color space into the YCBCR color space for the coarse detection of fruit region. The YCBCR color space has been designed to resemble the human visual perception.

Steps followed in this system was as follows

- 1) Find Min and Max gray levels for all pixels within image to calculate Range= [Max-Min].
- 2) Force all pixels to a new "stretched" value using the following formula: New Gray = $255 \times ((\text{Old Gray} - \text{Min}) / \text{Range})$.

3) Fruits isolated from the rest of the details of the image by using the segmentation technique and rely on color through the application requirement:

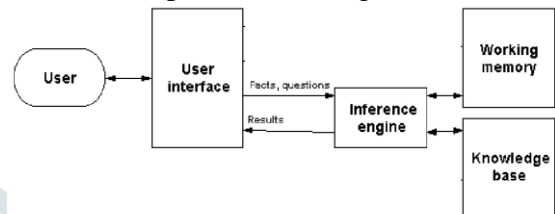
To validate the proposed fruit detection algorithm, twenty digitalized images of fruits (apple) each contains more fruits. The detection algorithm proved to be successful as it missed or misclassified only 1 to 3 fruits per tree, where by the fruit detection was accurate with 82.21 % recognition rate accuracy and an overall error rate 17.78 %. The algorithm detects the fruits accurately in the different lighting conditions, shadow effects of leaves on fruit and in clustered background.

DIAGNOSING FRUIT DISEASES

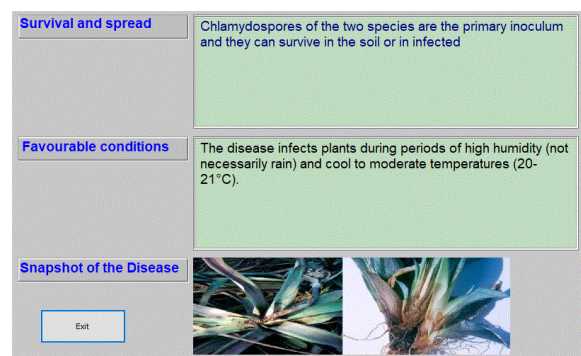
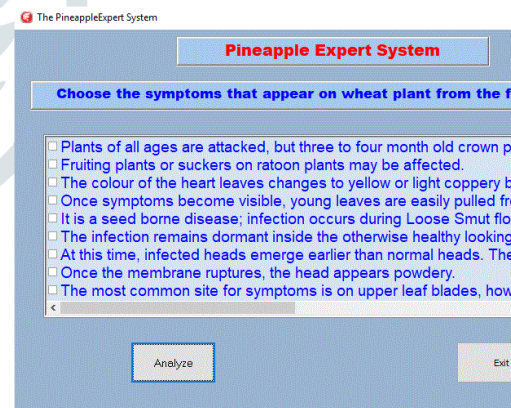


Pineapple is a common fruit plant that is a rich source of many plant nutrients recognized as important components of the Mediterranean diet but also used to treat and prevent a number of diseases, including cancer, coronary heart disease, obesity, hypercalcemia, type 2 diabetes, high blood pressure, cataracts Eye and gastrointestinal disorders (e.g. colic pain, vaginal colic and indigestion). Pineapple is an important crop on all continents with a global production of about 25 million tons. There was a gradual increase in pineapple production. Specialists in agriculture do not treat pineapple diseases in many places. In fact, the presence of specialists and specialized centers for the treatment of pineapple diseases is rare in most parts of the world. Pineapple diseases are very

common these days. Diagnosis of pineapple diseases is very complex. So they need specialists with extensive experience in pineapple diseases. For all the above reasons, we have developed this expert system to help specialists and farmers diagnose many oncology diseases, in order to prescribe appropriate treatment .The expert system is a computer application of Artificial Intelligence (AI) [2,4,6]; which contains knowledge base and inference engine; the components and key details are represented in Figure



The proposed expert system will diagnose 8 pineapple diseases by presenting all symptoms. The proposed expert system will ask the user to choose the type of problem symptoms. At the end of the dialogue session, the proposed expert system provides diagnosis and recommendations for the user.



CONCLUSION

In the survey system represents how the color identification mechanism are used in various fruits also how to diagnose some of the diseases of the fruits like pineapple. They use CLIPS and Delphi system for diagnosing. This system was applied only in pineapple fruit. My survey suggests the above system can be applied for tree based fruits like apple, orange for various diseases .

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