iJRASET
International Journal For Research in Applied Science and Engineering Technology

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 12 **Issue:** IV **Month of publication:** April 2024

DOI: https://doi.org/10.22214/ijraset.2024.59801

www.ijraset.com

Call: 08813907089 | E-mail ID: ijraset@gmail.com

International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
Volume 12 Issue IV Apr 2024- Available at www.ijraset.com

Pomegranate Fruit Disease Prediction Using Machine Learning

P. Ramya Sri[1], T. Prabanith[2], P. Saraswathi[3], Dr. S.Kirubakaran[4]
[1, 2, 3]*UG Student, Department of CSE, CMR College of Engineering & Technology, Hyderabad, Telangana*
[4]*Professor, Department of CSE, CMR College of Engineering & Technology, Hyderabad, Telangana*

Abstract: ***Pomegranate may be a broadly developed planting within Indian. This Profoundly useful natural product is contaminated by numerous bugs and illnesses which cause extraordinary temperate misfortunes. Distinctive Shapes of the pathogens maladies within leaves, Stems and of natural products are show. A few of the maladies that influence pomegranate natural products are anthracnose, heart decay and bacterial curse. There's a require for malady control procedures to incorporate opportune activity on the created infections. Hence, there's a require for shrewdly and self-learning acknowledgment frameworks to identify these illnesses within given Time. This think about is pointing to classifying of pomegranate natural products in twice classes ordinary and unusual utilizing CNN&LSTM procedure. This investigate work utilizes with cross breed CNN&LSTM procedure to distinguish four sort of maladies show within the pomegranate natural products and classifying all of them within 4 different classes. The comes about gotten utilizing CNN&LSTM are at that point optimized utilizing dragonfly calculation. The highlights like color, surface and shape of the natural products are gathered & bolstered into the half breed CNN&LSTM. The datasets with the classifier is understood like an exceed expectations record which is at first pre-processes utilizing outline diminish procedure and dimensionality carried utilizing foremost component investigation and Discriminant investigation.***

Keywords: Pomegranate Fruit diseases, classification, convolutional neural network, deep learning, disease detection, image processing.

I. INTRODUCTOIN

Pomegranate may be a natural product that develops with a terribly tall abdicate in numerous countries of Asian nations,and one in each once as in preeminent benefits picking up natural product inside the advertise. Be that as it may, since ofvarious condition, the plants are tainted by various illnesses that crush the whole trim, coming about in a awfully moo itemsurrender. So, the work proposes a picture prepare and neuralnetwork techniques to address the foremost common issues with phytopathology, i.e., the discovery & classifying towellness. Pomegranate natural product is additionally creditedto the reality that. takes off are influenced by illness caused by plants and climate. These illnesses are like curse microorganisms, plant spots, seed spoil, and leaf spots. The framework employments a few pictures for coaching, a few for testing capacities, and so on.

II. RELATED WORK

A. Early detecting of the pomegranates disease Utilizing ML

[1] Pomegranate is an unimaginably built-up characteristic item within Asia country with a tall advantage. Whereas, because of the dynamically discussing of conditioning as assortments with temperature, precipitation too as relative stickiness pomegranates trees will be corrupted by different diseases which closes in diminish of the gathering. Alter sicknesses will disclosed within of its starting activities using the assist and help of the expected Systems with utilizing secured up mark illustrate & sensing orchestrate, it can also be as willing to offer cautions with in farmers & in this way the capable. The pomegranate characteristic item and clears out are laid moo with different sicknesses exasperated using the plants vitality, microbes and so as with climate situation. This illnesses consolidate bacterial excoriate, normal item spot, common item rots and leaves spot

B. Identifying of Diseases in Pomegranate Leaves & Fruit

[2] Display paper is an endeavor to consequently review the malady on the pomegranate plant clears out. This inventive method would be a boon to numerous and would having some sample of preferences over the conventional strategy of evaluating. There had been a ocean alter within the mentality and the exertion put down by the agrarian industry by adjusting to thecurrent patterns and advances. One such illustration is the utilization of information data, communication innovation in framing which in the long run contributes to Accuracy Agribusiness. Directly, plant pathologists take after a monotonous method that primarily depends on

©IJRASET: All Rights are Reserved

exposed eye forecast and an illness scoring scale with reviewing of diseases in pomegranate. Manual evaluating isn't asit were time devouring but too does not provide exact comesabout. Subsequently the current paper proposes a picture processing methodology to bargain as being one in the most issues of plant pathology i.e., illness evaluating. The comes about are demonstrated to be exact and palatable in differentiate to manual grading and ideally take a solid leap forward in setting up itself within the market as one such of the foremost effective and compelling handle. The proposed framework is additionally an effective module that recognizes the Bacterial curse malady on pomegranate plant. At to begin with, the captured pictures are prepared forupgrade. At that point picture division will be carry out inducetarget districts on the takes off and natural products. Afterword, in the event that the unhealthy spots on leaf is bordered by yellow edge.

C. Pomegranate Fruits disease detecting with using Image Processing Technique

[3] The horticulture plant infections are dependable for rancher financial misfortunes. These infections influence on plant root, natural product, leaf, and stem. Finding early stage of infection location makes a difference the agriculturist to progress efficiency. Within the conventional framework agribusiness specialists and experts in agriculturist can identify the plant illness at lower precision which causes misfortunes to ranchers. Right now a few analysts are proposing delicate computing and master frameworks to recognize plant illnesses. Plant illness distinguishing proof by visual way is less accurate because a few maladies don't having noticing different effects or a few of the illnesses show up as well late at thetime of gathering. The present day innovation in farming division can significantly made strides the agribusiness generation and supportability. This project gives a audit for natural product illness discovery strategies of pomegranate plants. This consider incorporates preprocessing, division, include removal and classification methods for pomegranate natural product infections discovery frameworks. This project is used too states the comparisons and impediments of existing naturalproduct illness discovery strategies.

III. METHODS AND EXPERMENTAL DTAILS

A. Methodology

The methodology of our project is within the current founder deep model is proposed that's based on profound highlightsextricated utilizing CNN and CNN organize. The profound highlights are extricated from completely associated layers. The extricated profound highlights are sent as an initial value input in the cnn layer. After CNN layer a completely associated layer, aSoftMax layer and a classification layer utilized that would sort the pictures to typical and unusual which are representedwith course names and 1 separately. Within the current consider we extricated profound highlights by tests to work through some time recently upgrading the profound organize parameters. It can be watched from different investigates carried on to distinguish plant or natural product illnesses utilizing profound learning, CNN approach has demonstratedto deliver compelling precision results the display think about portrays the precision gotten from machine-based models to divide pomegranate as 2 different classes ordinary and unusual. Solid natural products are alluded to asordinary and ailing natural products are alluded to as ordinaryand ailing natural products are alluded to as irregular. The information is collected bywatching the vital highlights of natural products that quicklyexhibits the quality of natural product and is recorded. Illnessforecast within the natural product is associated to numerouscomponents such as weight of the natural product, number ofthe marks on top of the pomegranate, natural product shape, the plant stand and defoliation in the tree. The classification of the pomegranate natural products is carried out by a classifier show that was prepared on the preparing information toanticipate the course name of modern testing information. The oddity that our show work gives is include extraction assignment is done utilizing CNN demonstrate is combined with CNN to classify natural products which is significantly progressing the Accurate value in the classifications.

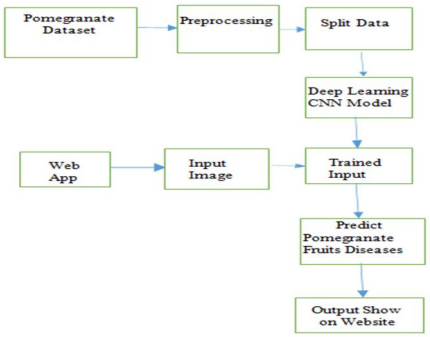


FIG 1: Architecture Model

1) *Pomegranate Dataset:* Attain a dataset containing pictures concerning the pomegranates Fruits with labels for various diseases or conditions.
2) *Web App:* Formulate a web application framework where users have the capability to upload images for analysis; disturbingly.
3) *Preprocessing:* Cleansing and preparing the dataset involves resizing images, normalization, and other transformations to possibly ready them for model training.
4) *Split Data:* Fragmentize the dataset into training, validation, and test sets, ensuring an accurate evaluation of the model's performance.
5) *Deep Learning CNN Model:* Conceptualize and render a Convolutional Neural Networks (CNN) model befitting for tasks in image classification; model's training needs to rely on the preprocessed dataset wholeheartedly.
6) *Input Image:* Permit users to upload images depicting pomegranate fruits via the web app interface; inconceivably.
7) *Trained Input:* Convey the uploaded images through the trained model as the CNN for the prophecy of diseases; momentously.
8) *Predict Pomegranate Fruit Disease:* Employ the CNN model upon the prophetic powers to reveal the manifest disease or condition within the pomegranate fruit, depending exclusively on the input image; in a strange turn of events.
9) *Output Show on Website:* Showcase the prophecy results on the website interface, demonstrating the discovered disease as well as also with various same kind of info or suggestions.

IV. RESULTS AND DISCUSSION

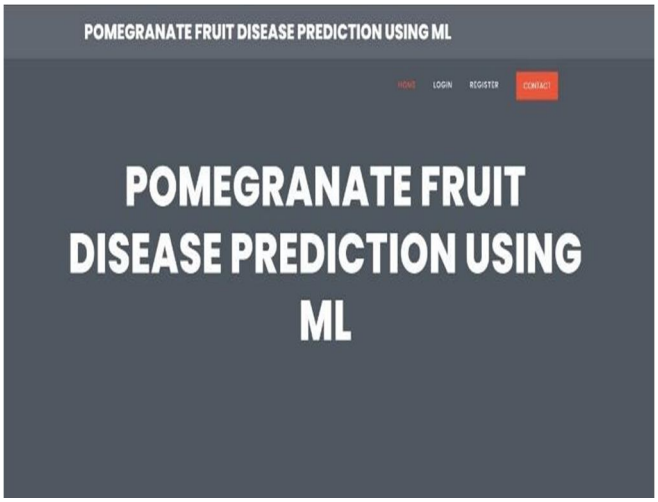


Fig 2: Home page

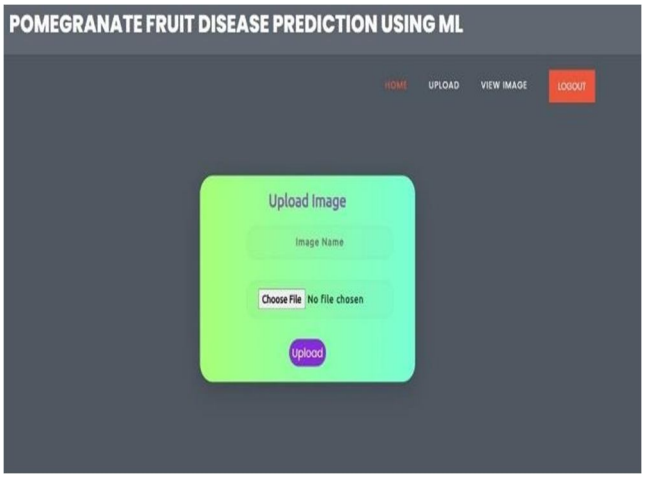


Fig 3: Select The Input Image

Home page is the main web page of a website. It may also refer to the start page shown in a web browser when the application first opens. Select the Input image from dataset. Drag and drop to uploadthe dataset we click the button named Upload. The dataset is uploaded successfully.

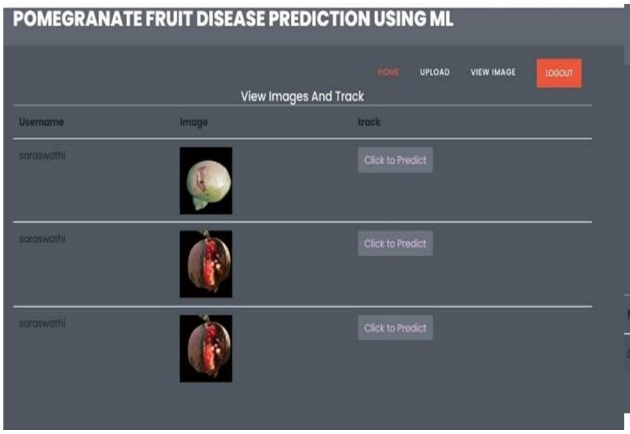


Fig 4: Predict Disease

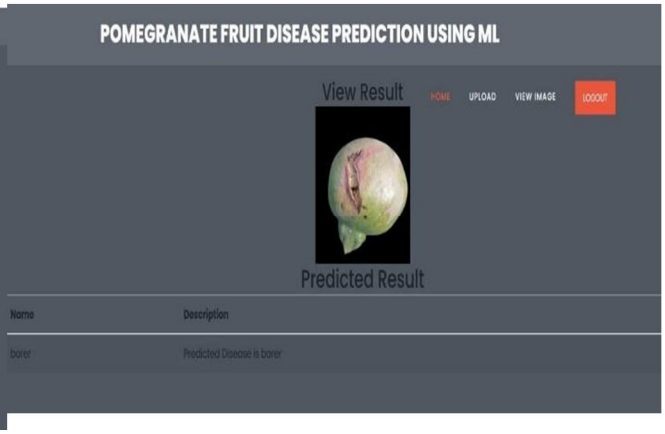


Fig 5: Predicted Result

When the dataset is uploaded successfully, we view images and track then go to click to predict. It verifies the Pictures & predict the diseases. After predict the disease. It will display the result whichdisease is predicted.

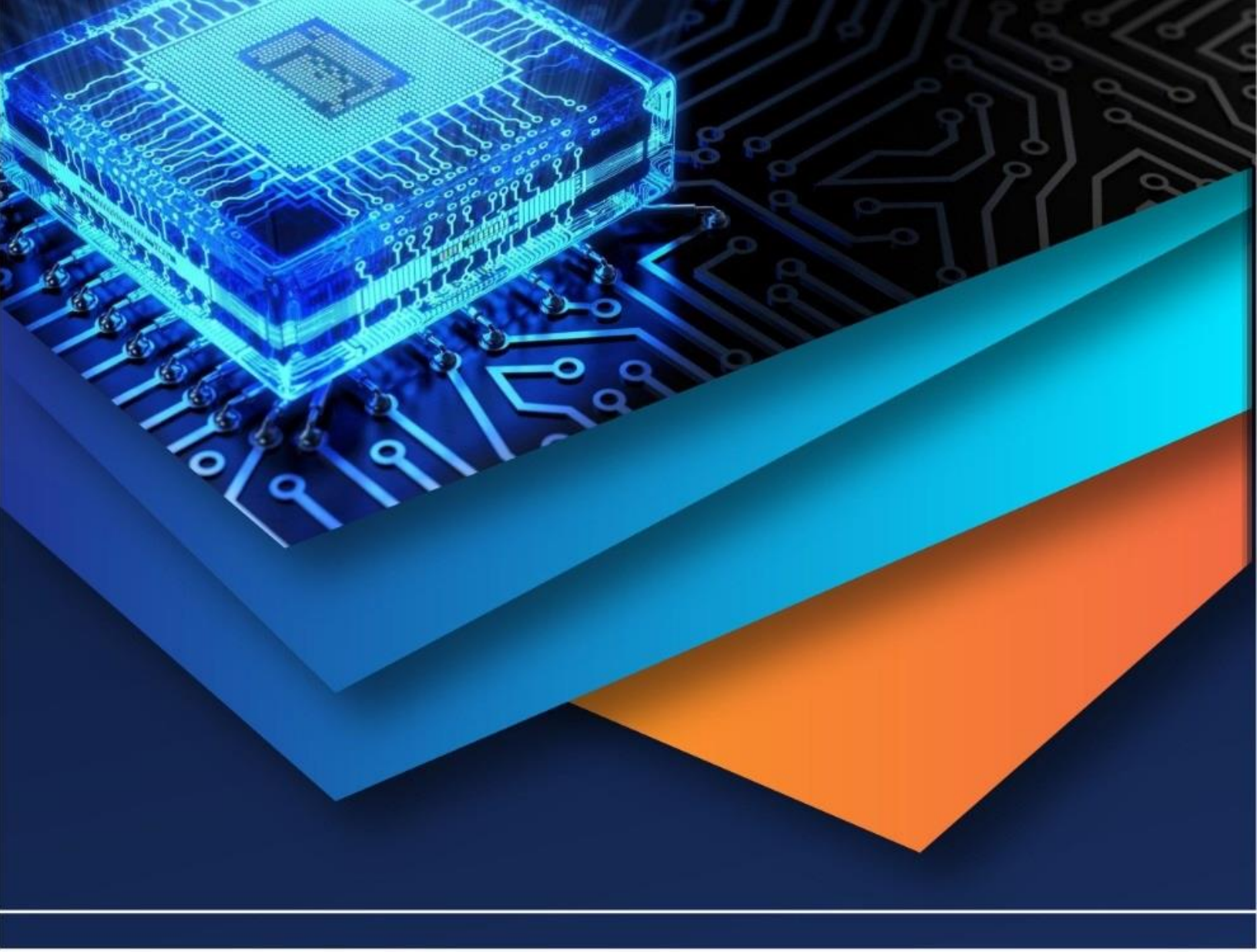
V. CONCLUSION

The Utilization of pomegranate and pomegranate normal itemsickness find utilizing machine stallion, especially the CNN calculation, at the side a carafe web application, has showed up promising comes approximately. The system centres on theacknowledgment of three illnesses: borer, and bacterial revile,also classifying sound natural products. By utilizing theCNN calculation, the illustrate can remove imperative highlights from pomegranate and pomegranate common item picture, allowing it to recognize between strong characteristic items and those affected by specific infections. The utilize of CNNs is particularly fruitful in picture classification assignments due to their capacity to capture

REFERENCES

[1] Dhakate, Mrunmayee, & A. B. Ingole. "Diagnosis of pomegranate plant diseases using neural network." 2015 fifth national conference on computer vision, pattern recognition, image processing and graphics (NCVPRIPG). IEEE, 2015.
[2] Deshpande, Tejal, Sharmila Sengupta, & K. S. Raghuvanshi. "Grading & identifying of diseases in pomegranates leaves and fruit." International Journal of Computer Science and Information Technologies 5.3 (2014): 4638-4645.
[3] Pawara, Sona, et al. "Early detection of pomegranate disease using machine learning and internet of things." 2018 3rd International Conference for Convergence in Technology (I2CT). IEEE, 2018.
[4] Patil, Jayashri. "Pomegranate Fruits diseases detecting utilizing Image Processing Techniques: a review." Information Technology in Industry 9.2 (2021): 115-120.
[5] More, Sunil, & Mininath Nighot."An agro advisory to pomegranate fields utilizing wireless sensoring networks." 2016 International Conferences on the Automatic Control and Dynamic Optimizing Techniques(ICACDOT). IEEE, 2016.
[6] Bhange, Manisha, & H. A. Hingoliwala. "Smart Farming: Pomegranates diseases detecting utilizing Image Processing." Procedia computer science 58 (2015): 280-288.
[7] Deshpande, Tejal, Sharmila Sengupta, & K. S. Raghuvanshi. "Grading & identification of diseases in pomegranates leaves & fruits" International Journal of Computer Science and Information Technologies 5.3 (2014): 4638-4645.
[8] Dubey, Shiv Ram, & Anand Singh Jalal. "Detecting & classifying of the Apple fruit diseases utilizing complete local binarys patterns." 2012 Third International Conferences in Computer & Communication Technology. IEEE, 2012.
[9] Zhang, Chunxia, Xiuqing Wang, and Xudong Li. "Design of the monitoring and controling plant diseases system based upon DSP&FPGA." 2010 Second International Conferences in Network Security, Wireless Communication & Trusted Computing. Vol. 2. IEEE, 2010.
[10] Kim,Dae Gwan,et al. "Classifying of the Grapefruit peels diseases utilizing various coloring texture feature analysis." International journal of agricultural and biological engineering 2.3 (2009): 41-50.
[11] Jhuria, Monika, Ashwani Kumar, and Rushikesh Borse. "Image Processing for the smart farming: Detecting of diseases and fruits grading." 2013 ieee 2nd international conferences in Image Information Processing (ICIIP-2013). IEEE, 2013.

©IJRASET: All Rights are Reserved | SJ Impact Factor 7.538 | ISRA Journal Impact Factor 7.894 |



10.22214/IJRASET

45.98

IMPACT FACTOR: 7.129

IMPACT FACTOR: 7.429

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Call : 08813907089 (24*7 Support on Whatsapp)