Rice Diseases Diagnosis

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Abstract

Rice is a great importance among food crops in the world, and rice occupies the most important main grain crop in Egypt, but there are some diseases that may affect the crop and negatively affect the quantity of the crop in relation to the economy of the country, so discovering these diseases early may help to preserve the entire amount of the crop, increasing production and national income from this crop.

Our goal is to provide a solution to discover some diseases that affect the rice plant, so we made a mobile application that works to discover the rice diseases by inserting the image of the rice and making some operations and algorithms using tensorflow kares model using the Mobilenet algorithm to discover if it is infected with any disease or healthy and determine the type of disease for a rice paper, for example, the BrownSpot, Hispa and Leaf Blast.Also, our application includes some pages of the definition and the treatment for each disease.

In the end, our goal is to provide a disease-free plant and to preserve a large amount of the plant without harm to have the most benefits from it.

Objective

Early detection of various diseases of rice blocks and providing the user with some information about the disease and suggesting some methods of treatment through the use of a mobile application . which is one of the most important problems facing the field of agriculture in general.

(infected) rice plant

(healthy) rice plant

References

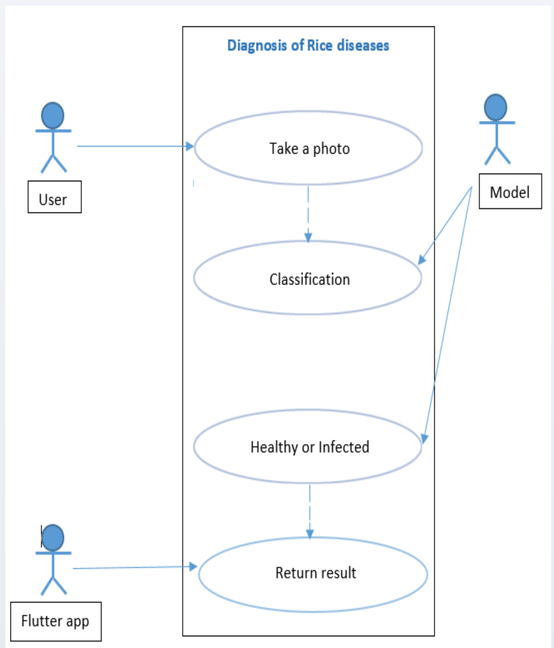
1- Tensorflow .Org

2- Python .Org

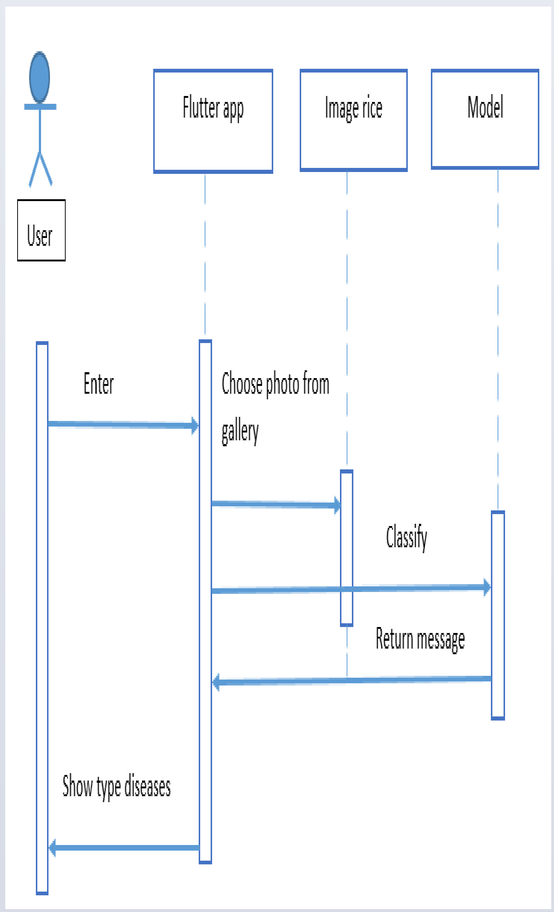
3- Kaggle .Com

4- Flutter .Dev

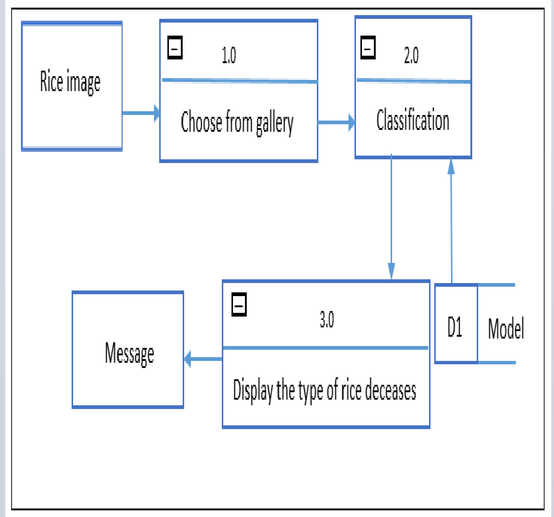
Methods



use case diagram



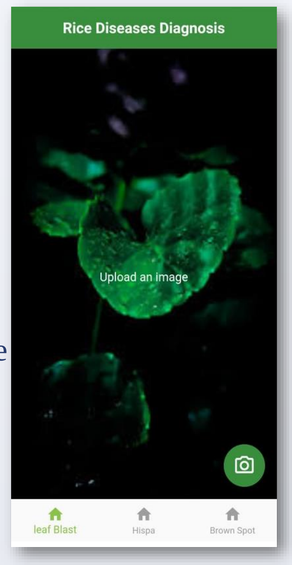
sequence diagram



dataflow diagram

Expectation Results

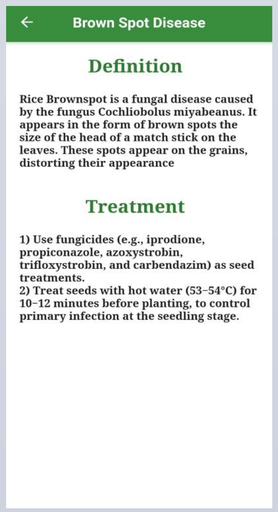
- In the main interface of the user, there are two ways that the user can take in the application, one of which is for the user to upload an image from the phone gallery, and then the application displays the image and determines if it is healthy or infected and shows a message below the image and shows the type of disease in case of injury.



- The uploaded image shows a message that it is infected with BrownSpot disease .

- Here the uploaded image shows a message that the rice leaf is healthy.

- This is the second option for the user to navigate through the navigation bar to the disease profile pages and their treatment methods.



Conclusions

Despite the importance of the rice crop to people, the impact of diseases on it reduces its production, but with the use of modern technologies using artificial intelligence and machine learning to understand the mechanism of the plant and obtain high-accuracy results, it has led to the fact that it is possible to discover diseases that affect the plant from the beginning and thus treat them faster thus, high results are achieved . in this paper, we used a dataset for a large group of rice plants and photographed them at different angles in different weather conditions, using pictures of rice diseases, and training the model on them to obtain high accuracy results. Several augmentation technique was used. Affiliate ready libraries to transfer learning technology (mobile net) to prepare a file pictures and increase their number through some operations for that technology, a new architecture, the mobile network, has been proposed to detect plant diseases. The accuracy is 89.99999. Due to its architectural design it proved to be successful in situations with complex surroundings. Accuracy could potentially be enhanced by the exploitation of other information sources such as location. This model was connected to a mobile app using tensor flow lite for high quality and accuracy when used with our model (mobile net).

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