

Identification of Diseases of Rose Flowers using Image Processing Techniques

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Exporting rose flowers are one of the major business for farmers in upcountry. When exporting roses, there are several quality factors to be considered like size and color. Due to the high sensitivity to its growing environment roses are vulnerable to several diseases. Due to the diseases, the quality factors are heavily affected and sometimes entire fields of cultivations are getting wasted before plucking a single flower. The lack of knowledge in symptom identification by farmers and the limited no of domain expertise in the area are the major problems in identifying and controlling the diseases which are affected the rose flowers. Through a field survey and by consulting domain experts, it has been identified that gray mold, black spots, and anthracnose are the major diseases that are heavily affected to bud, flower, and lifetime of flower and the rose plant. Further, the survey revealed that early identification of these diseases can save flowers, plants, money, and the confidence of the farmers while improving the export quality and volume of flowers. To address the findings of the survey, this study was conducted in selected rose fields in *Bandarawela, Badulla* district. A set of self-captured images which were labeled with the help of domain experts were used to build and train the proposed model. The proposed model will identify the diseases by identifying and categorizing the symptoms. The model was built in combination with the image processing techniques and Convolutional Neural Networks and used the guided data processing technique for training the data set. The developed model achieved over 94% of accuracy with the test set. The model will further be improved to identify the severity and the stage of the diseases and it will assist farmers in their rose cultivation by providing context-specific, updated information to identify, control and prevent the spreading of the identified diseases by improving the quality of the export rose flowers.

Keywords: Anthracnose; Black spots; Gray mold; Disease identification model; Rose