**1st Computing Colloquium 2019**

**a. Title –**

**DigiMango: A Digital Image Processing on Anthracnose Severity of Mango**

b. Authors –

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d. Introduction –

DigiMango was developed to assess the severity of anthracnose disease in mango fruit quantitatively. It evaluates and produces rating results of the spot-like lesions on the surface of the mango fruit. It captures four (4) sides of a mango fruit and measures the percentage of the total surface area where the disease is visible. It also helps the researchers and plant technicians in post-harvest fertilizer product experimentations in identifying and objectively rating the severity of anthracnose disease in individual fruit with less time and effort. The application will use evaluation based on scale, assessment from (mild infection to severe infection) based on the evaluation of percentages of the area affected in the sampled fruits: 0%(no infection), 1% - 20% (mild infection), 21% - 40% (below average infection), 41% - 60% (average infection), 61%-80% (above average infection), 81%-100% (severe infection) depending on the scope of the area affected by anthracnose lesions.

e. Materials and Methods

**Materials:**

The developers of DigiMango used Android Studio IDE in developing the application; Fluid UI in creating the application design; and SQLite Database was the database used by the application.

**Method:**

Mobile Application Development Cycle (MADLC) was the methodology used by the developers of DigiMango. It helps the developers build robust and optimal control application upon following the framework of MADLC.

**Mobile Application Development Lifecycle**

IDENTIFICATION

DESIGNING

DEVELOPMENT

PROTOTYPING

TESTING

DEPLOYMENT

MAINTENANCE

f. Results and Discussion

**Accuracy Test (evaluated by the expert)**

|  |  |  |  |
| --- | --- | --- | --- |
| **Test** | **Rating of Expert (%)** | **Mobile Application Rating (%)** | **Remarks (0 or 1)** |
| **1** | **22.5** | **22.25** | **1** |
| **2** | **49** | **51.11** | **1** |
| **3** | **34** | **41.86** | **1** |
| **4** | **67.5** | **65.29** | **1** |
| **5** | **23** | **22.27** | **1** |
| **6** | **79** | **74.24** | **1** |
| **7** | **39** | **40.32** | **1** |
| **TOTAL:** | | | **7 / 7** |
| **REMARKS:** | | | **ACCEPTED** |

Legend:

0 – Rejected

1 – Accepted

The developers conducted various testing of the application to assess the application’s accuracy. The table shows the comparison of the ratings between the expert and application. Based on the remarks given by the expert, the application’s rating is accepted in terms of its accuracy.

**Paired Sample Statistics from the Accuracy Test Evaluated by the Expert**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | **Mean** | **N** | **Std. Deviation** |
| **Pair 1** | **Application &** | **45.3343** | **7** | **19.87121** |
|  | **Expert** | **44.8571** | **7** | **21.70007** |

*Mean* is the average calculated from each rating method (through application and expert), *N* is the number of samples participated in the calculation, *Std. Deviation* is a measure that is used to quantify the amount of variation or dispersion of a set of rating values given. The mean rating of the application with 45.33 and the expert’s with 44.56 is almost the similar, same goes for its standard deviation. Therefore, the researchers conclude that the application’s rating is acceptable and statistically not-significantly different.

g. Conclusion &/ or Recommendation

**Conclusion**

The following objectives of the study were all met by the developers:

(1) Evaluate the percentage of anthracnose lesions in a mango fruit.

(2) Calculate the rating of anthracnose disease on mango fruit at the maximum of ten (10) samples in one transaction.

(3) Store the past ratings of projects that have been analyzed.

**Recommendation**

1. The application is recommended to run on IOS and Windows platforms and must not be limited to android phones only.

2. It is suggested to evaluate and calculate more than ten (10) mangoes in one process to lessen the time it would take in administering the researches.

3. The future developers should enable cloud computing backup functions to avoid possible data loss.

4. Web application should be added so that it would automatically generate reports through excel.

h. References