Chapter 8

Graphical User Interface

8.1 Introduction

A graphical user interface (GUI) is a human-computer interface (i.e., a path for people to interact with computers) that utilizes windows, icons and menus and which can be controlled by a mouse (and regularly to a constrained degree by a console too). A GUI uses a blend of advances and gadgets to give a stage that the client can interface with, for the assignments of get-together and creating data. The most well-known mix of such components in GUIs is the WIMP (window, icon, menu, and directing gadget) worldview, particularly in computers. Planning the visual synthesis and transient conduct of GUI is a vital part of programming applications. It will probably improve the productivity and usability for the fundamental legitimate configuration of a put away program, an outline discipline known as ease of use. Strategies for client focused outline are utilized to guarantee that the visual dialect presented in the outline is all around custom fitted to the undertakings.

A GUI might be intended for the prerequisites of a vertical business sector as application-particular graphical UIs. Case of utilization particular GUIs are:

- Mechanized teller machines (ATM).
- Purpose Of-Sale touch screens at eateries.
- Self-administration checkouts utilized as a part of a retail location.
- Carrier self-ticketing and registration.
- Data stands in an open space, similar to a train station or a historical centre etc.

**Advantages of GUIs**  A noteworthy preferred standpoint of GUIs is that they make PC operation more natural, and along these lines less demanding to learn and utilize. For instance, it is much less demanding for another client to move a record from one catalogue to another by dragging its symbol with the mouse than by remembering and sort apparently arcane summons to fulfil the same errand. For instance, when a client erases a symbol speaking to a document, the symbol quickly vanishes, affirming that the record has been erased (or possibly sent to the rubbish can).

8.2 Matlab GUIDE (Graphical User Interface Development Environment) and Programming Method

With MATLAB we can make our own particular Graphical User Interface, or GUI, which comprises of a Figure window containing menus, catches, content, representation, and so on. That a client can control intelligently with the mouse and console. There are two fundamental strides in making a GUI: One is planning its design, and the other is composing call back works that play out the craved operations when the client chooses distinctive elements.

**GUI Layout** - GUIDE, the MATLAB graphical UI improvement environment, gives an arrangement of instruments for making graphical UIs (GUIs). These devices disentangle the way toward laying out and programming GUIs. Utilizing the GUIDE Layout Editor, you can populate a GUI by clicking and dragging GUI parts.

**GUI Programming** - Manage consequently creates a system document containing MATLAB capacities that controls how the GUI works. This code record gives code to instate the GUI and contains a system for the GUI call backs the schedules that execute when a client cooperates with a GUI part.

8.3 Screenshots

Here in figure 8.1 we have utilized three casings, one pop-up menu, pushbuttons and picture transfer Area (hub). This is the straightforward and easy to use GUI for the end user.

The next step is to select the image using dropdown menu and click upload button for uploading
same sample. We can apply radio button for selecting the particular type of rice sample. In figure 8.2 Ponja rice variety is selected for further classification.

The next step is to detect the edges of the given sample as discussed in earlier chapter so

![GUI for application](image1.png)

Figure 8.1: GUI for application

![Rice Variety sample selection for further process](image2.png)

Figure 8.2: Rice Variety sample selection for further process

one can easily access the push button and automatically the edge would be detected as shown in figure 8.4. The next step is to calculate the geometric parameters of rice seeds for further classification as shown in figure 8.5 to figure 8.11 respectively. The last step is to showcase the
Figure 8.3: Rice Variety sample for image upload

Figure 8.4: Rice Variety sample edge detection
results of the rice variety sample being analysed in form of number of small, normal and large seeds. It also displays the percentage wise evaluation as shown in figure 8.12.

**Figure 8.5: Rice Variety sample Area calculation**

**Figure 8.6: Rice Variety sample Major Axis calculation**
Figure 8.7: Rice Variety sample Minor Axis calculation

Figure 8.8: Rice Variety sample Eccentricity calculation
Figure 8.9: Rice Variety sample Convex Area calculation

Figure 8.10: Rice Variety sample Extent calculation
Figure 8.11: Rice Variety sample Perimeter calculation

Figure 8.12: Result Window
8.4 Conclusion

In this chapter we have developed GUI (Graphical User Interface) Framework for Quality evaluation of rice seeds. A graphical user interface (GUI) is an End user and computer interface (i.e., a path for people to interact with computers) with GUI controls. Using this framework, we can analyze quality of 8 different variety of rice seeds. Moreover we can quantify the quality of mixed rice varieties. This system is very useful for end user as it not only help them to calculate geometrical features but also classifies them in three categories as discussed earlier.