
**MODY UNIVERSITY**
**SCHOOL OF ENGINEERING AND TECHNOLOGY**
**DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING**


# Virtual Keyboard

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# Project Description

The virtual keyboard is an on screen graphics keyboard. They are used in computing devices like cell phone, for which we do not require extra hardware. The keyboard layout can be changed hence allowing user to change the layout based on application. The most important advantage of the proposed virtual keyboard is that it is very environmentally friendly and it can also be carried anywhere, unlike regular keyboards.

The virtual keyboard is an on screen graphics keyboard. They are used in computing devices like cell phone, for which we do not require extra hardware. The keyboard layout can be changed hence allowing user to change the layout based on application. The most important advantage of the proposed virtual keyboard is that it is very environmentally friendly and it can also be carried anywhere, unlike regular keyboards.Virtual keyboard is just another example of innovation in field of computer technology. Nowadays computing is not just limited to the desktops but can also be seen in our mobiles. But one thing that has not changed since the beginning is the keyboard interface i.e. QWERTY keyboard. Virtual keyboard is the new innovation in this field.

The virtual keyboard technology makes use of camera and image processing techniques enabling user to work on any flat surface using paper keyboard. Virtual keyboard lets us create a keyboard in any of the preferred language on almost every existing platform. The properties of virtual keyboard being small and easy to use application make it a good solution for text input across different platforms. Since the name proposes the virtual keyboard has no physical look. Virtual keyboard is an application that virtualizes equipment console with very surprising formats along these lines allowing user to modify the design in application. E.g. user will pick very surprising dialect for proofreader or pick a specific format for bad habit applications. User will even style his very own design in equipment variant

Virtual keyboard is simply one more case of advancement in field of PC innovation. These days registering isn't simply constrained to the work areas yet can likewise be found in our mobiles. In any case, one thing that has not changed since the start is the console interface i.e. QWERTY console. The virtual keyboard innovation makes utilization of camera and picture handling (image processing) procedures empowering client to use it away at any level surface utilizing paper console. Virtual keyboard gives us a chance to make a console in any of the favored dialect on pretty much every current stage. The properties of virtual console being little and simple to utilize application make it a decent answer for content contribution crosswise over various stages.

Virtual keyboard is superior to QWERTY console as old QWERTY consoles are unit expansive and serve little as far as improvement while virtual keyboard are littler in size and convenient. Key highlights of the virtual keyboard are: security lock systems is the prime application, it supports numerous content dialects, is little in size, and underpins each content activity characterized in framework dialect settings, easy to use. The camera will capture the live video feedback of the user using the keyboard and will transfer it in the program which at that point will pre-process the picture i.e. either blur or sharpen it as indicated by need of the circumstance and afterward actualize different picture handling strategies, for example, threshold, segmentation and yield what the user has composed and create it on the display.

Python programming will be utilized in the picture preparing segment. Steps like converting image into binary format, applying edge detection algorithms will be followed in this specific arrangement.

# Applications

- High-tech and industrial sector.
- Used with smartphones, PDAs, email, word processing and spreadsheet tasks.
- Gaming control.

# Outcome

The goal of this project is to actualize a virtual keyboard. Inside the framework one high-quality camera will be used which catches RGB photos of a user's hands, in order to choose keystrokes and further using image processing techniques, these touch made by the user are monitored and output keystrokes are generated accordingly.

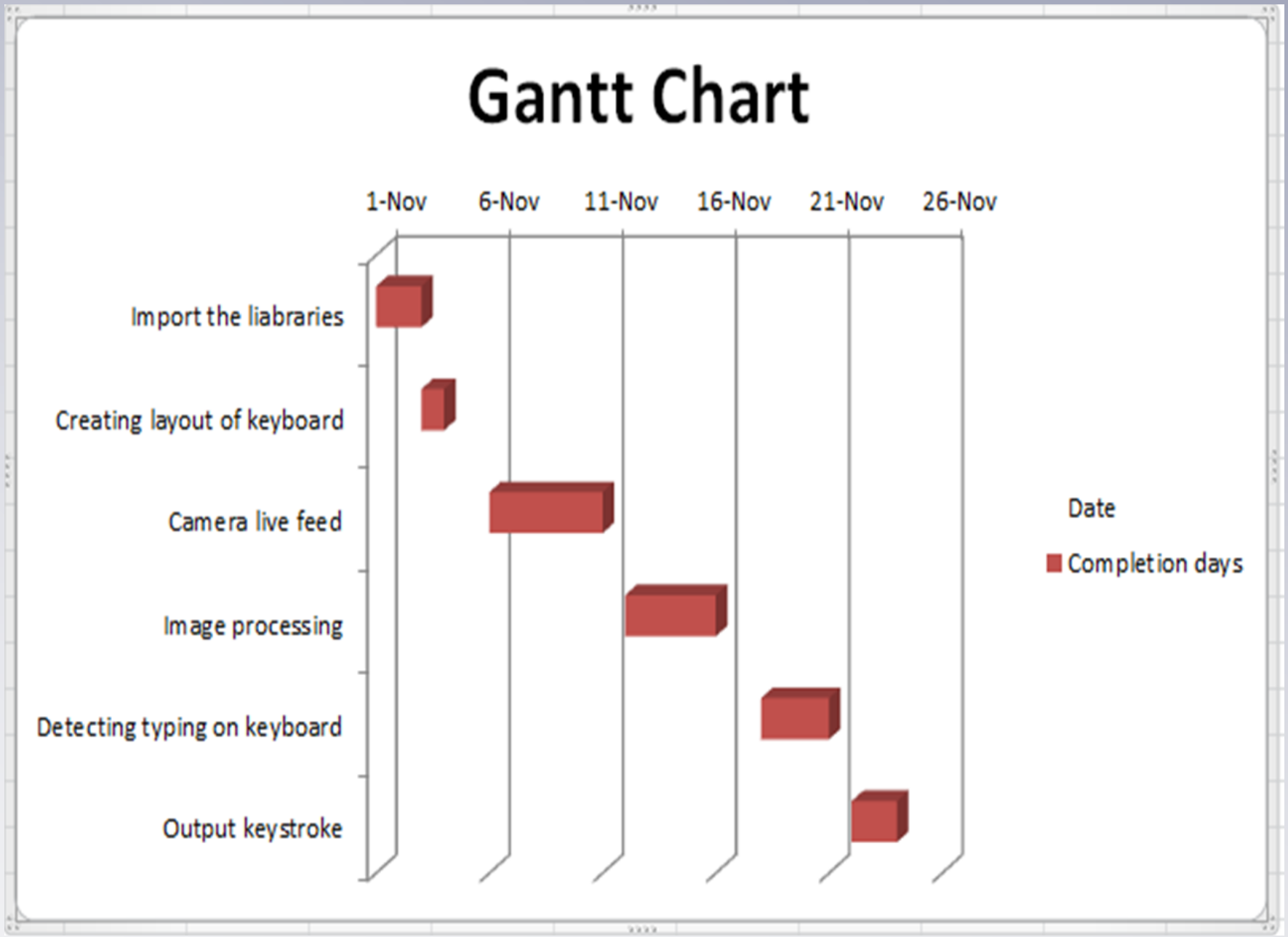
# TECHNIQUES

- Blob detection: First the image i.e. character is capture by the webcam then that image is stored temporarily. Now given image is  converted into black and white colour using.
- Greyscale algorithm. Greyscale digital image is an image in which the value of each pixel is a single sample. Then Thresholding algorithm is applied on the Greyscaled image to differentiate the object from the background. Thresholding is the simplest method of image segmentation. This process is iterative type that means the process repeat on every object entry and the object is nothing but input given by the user.

- By using Threshold algorithm we can identify the character given by user. Using this technique we identify our finger tip.
- Keystroke detection: The key press coordinate needs to be mapped to a key scan code. This is accomplished by scaling and transforming the coordinates such that the boundaries of the keyboard , in image space it correspond to the sides of a rectangle
- The transformed coordinate is rounded down to the nearest integer to produce the array indices of the corresponding key code. When the user wants to press a key, what he has to do is simply place his finger at the appropriate position in the frame, in other words on the virtual keypad and the desired key will be pressed.

# Advantages

- We can create keyboard’s layout as per our convenience.
- It cost  less than existing keyboard.
- The system is very easy to use and is more secure as compared to the existing keyboard.
- It is also enviornment friendly.


Gantt Chart
1-Nov
6-Nov
11-Nov
16-Nov
21-Nov
26-Nov
Import the liabraries
Creating layout of keyboard
Camera live feed
Image processing
Detecting typing on keyboard
Output keystroke
Date
Completion days

# References


- www.sciencedirect.com
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