



SOFTWARE TOOL WITH ANIMATION SUPPORT TO GRAPHICALLY DISPLAY SIGNALS WITH COLOUR EFFECT

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Abstract— This Project work aims to build the software system or tool that can display the information on the screen in the form of waveform and can analyze properties such as amplitude, frequency, rise time, distortion, time interval and etc based on what type of signal is used same as that of or similar to hardware CRO. The CRO is an electronic hardware test instrument, it is used to get waveforms results when the all verity and different type of input signals are given to it. many years back, it is called as Oscillograph. The oscilloscope which always observes the changes and differences in the electrical signals or any other type of signals over time. It is continuously graphed on screen beside a scale and dimension of the signals. By seeing the waveform, we can analyze changes in signal and some properties like frequency, amplitude, rise in time, distortion, time interval or difference in time and etc based on what and which type of signal is used.

Keywords—Video frames, frequency, CRO, Software Tool, Graphics, Zoom, Animation.

I. INTRODUCTION

Innovation has radically and rapidly changed from the most recent 10 years. It is gradually transforming ourselves to make all things simple best, and better. When it comes to software programming, Programming of software, or just programming, is a jumble of information or software directions that always advise the PC that how it should function. Which is opposite to physical equipment, from which the framework is build and really plays out very well in work. In software type of engineering and programming building, PC programming is all data or information handled by PC frameworks, projects and lot of information.

The CRO is one of the hardware electronic test instrument; it is used to get waveforms on the screen display when the different and verity type of input signals is given to the hardware. many long years back, it is called as an Oscillograph. The oscilloscope observes and gathers the information that changes in the electrical signals or any other type of signals over time. It is always continuously graphed on screen beside a scale and dimension of the signal. By seeing the waveform, we can analyze some properties like frequency, amplitude, rise time, distortion, time interval and difference in time and etc based on which and what type of signal is used.

There are some drawback of CRO such as Implosion - High vacuum that is present inside of or glass-screen cathode-ray tubes allows or spreads electron beams to fly around freely—without colliding into whole molecules of air or other type gas. If the glass is broken or if the glass is damaged or any other type of effect is occurred, atmospheric pressure can break down all the vacuum tube into harmful small- very small pieces which increase

inward and then spill at high speed in all directions in atmosphere[1]. The breaking energy is equal to the evacuated volume of the CRT. Although now a day's cathode-ray tubes used in TV and computer screen have epoxy -bonded face-plates or other measures to prevent spilled of the envelope, CRTs must be used very carefully to avoid physical injury.

Electronic Hardware Shock: To accelerate all the electrons from the cathode to the screen with very sufficient velocity, a very high-voltage (EHT or Extra High Tension) is needed, from thousand volts for a very small oscilloscope CRT to ten's of voltage. This is very much greater than power supply voltage of house. Even though power supply is turned off, some connected capacitors and the CRT itself may retain a charge for some more larger time and therefore that charge very suddenly through a ground such as an inattentive human grounding a capacitor discharge lead[2].

Oscilloscopes are most sensitive to interference coming from beside circuits. It is very true when using to test a computer's electrical hardware system. If you use it to test the motherboard, for instance, you get some interference from video card, The hard drive and the computer's fan. You can filter this combining out if you have an good knowledge of the oscilloscope's controls, by doing so it take time. As there no available of storage memory, it analyze signal in real time. Frequency sharp rise time transients cannot be analysed. It always requires some large amount of good training to how to use it. CRO's are large in size, bulk and heavy. It utilize a lot of Electricity/Power and which produce large amount of heat around it. Hardware problems such as knob breakage, buttons breakage and there are lots of control terminals

over control panel of CRO that leads to a greater complexity of the device making it difficult to use for user. One more drawback of CRO is it cannot store the result, we can only view the results in CRO. Due to some drawback of CRO such as Complexity ,Hardware Board Connection , GPIO manual pin set up, Special Testing Procedure and Hardware failures made to develop the software tool for graphically displaying information in CRO.

II. SYSTEM ARCHITECTURE

1. Existing System

The cathode-ray-tube is the vacuum tube that converts the electric signal into the visual signal. The cathode-ray-tube specifically consist electron gun and the electrostatic deflection plates (vertical and horizontal).The electron gun produces a focused-beam of electron that's accelerated to more frequency.

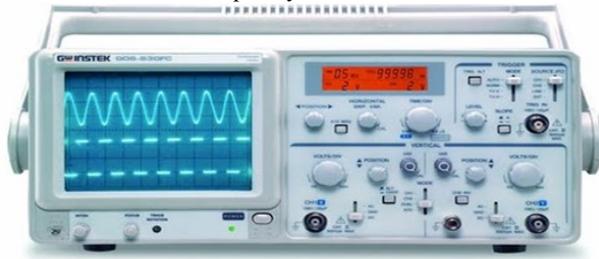


Figure 2.1 CRO[6]

Basically the video timing information is graphically displayed in CRO in two dimension to know the synchronous condition of input and output video signal. Due to some drawback of CRO such as Complexity in Hardware Board Connection, Implosion, Electric Shock , GPIO manual pin set up, Special Testing Procedure and Hardware failures made to develop the software tool.

2. Proposed System

The proposed system generates an output with respect to output data in log file. considering the input information in the log file difference found in the output is used to analyse the signal. This system consist of few buttons and modulator with the graphic display the zoom button and animation button are the important functions of this proposed system .

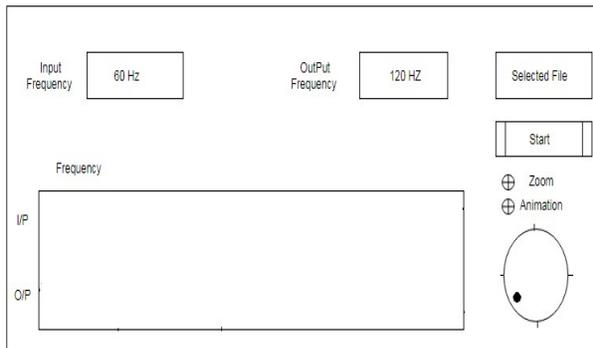


Figure 2.2 Proposed system design

III. METHODOLOGY

This project is developed in Qt platform to get to get the results. The objective here is if the input frequency is 60 Hz video is give then converted to output to be displayed video at 120 Hz. .If any mismatch in video frequency of output n input and output is observed graphically. Qt is one of cross-platform app and graphical user interface (GUI) framework, a tool, which is used for software development that can run on all hardware platforms and operating systems[3]. Qt app makes everything easy to develop software with native looking (to the OS it is running on) GUIs using standard C++ language, because of this it classified as a widget toolkit. Qt is a cross-platform development of software framework that are used to create native-embedded, desktop and mobile apps. It is written in C++ and also python language which gives wide range of different features you might need in your platform. These all are well developed for each platform by using native technology available on that platform.

Qt is useful for multiplatform GUI toolkit for developing software apps using standard C++[4]. It gives developers all the required functionality used to build cross-platform applications with "state_of_the_art" GUIs. Because Qt app uses C++, it is fully object oriented and allows for easily extensible and true component programming.

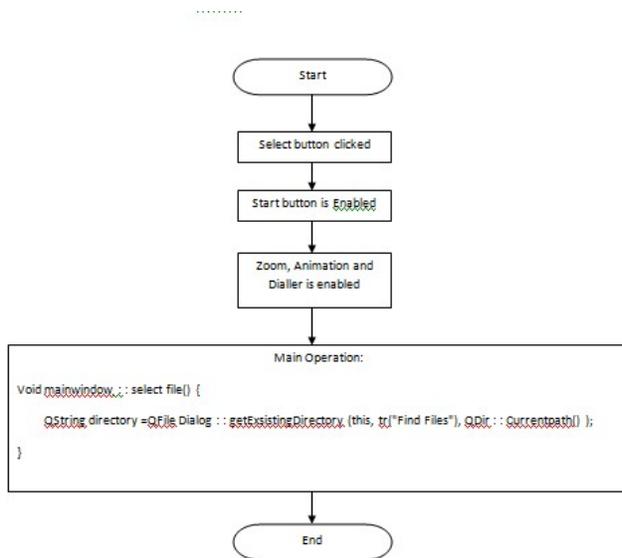
Qt is marketed as a "write once, compile anywhere" framework that saves time for developers because they only need to create and maintain a single code base in whatever platform they wanted to develop in the final software that will compile in every other platform.

1. File Selection Module

The input for this module is done by the user by selecting the select button we can browse the log file that need to be displayed in the form of graph to get the required information.

When the select button is clicked first the start button is enabled and then the zoom, animation radio button is also enabled. By default zoom is selected. Dialler is also enabled.

Next the browser is opened to select the required file which will be present in the sample files of same directory. Once the File is selected the file is loaded into the tool.



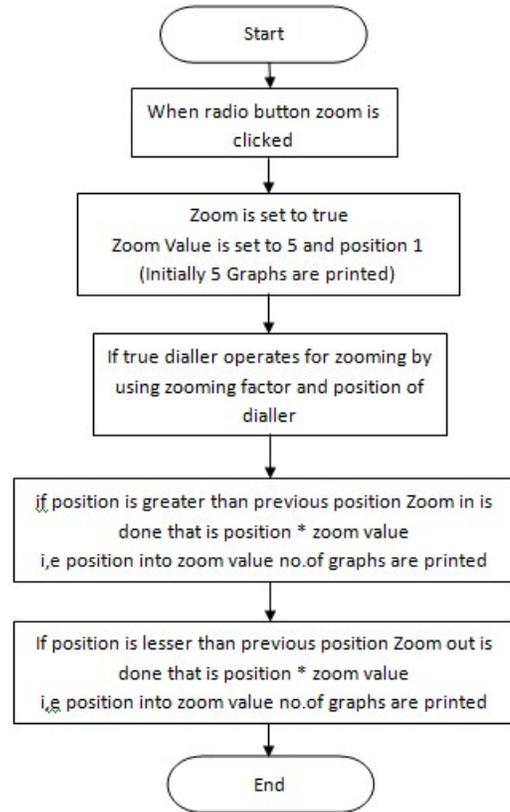
2. Start and Data Parsing

This module is triggered when the start button is pressed by the user. By pressing the start button parsing of that data and printing of graph and information is started.

Input to this module is video signal wwith data of input and output frequency. the data is loaded by hardware in to log file. It generates a graph in graphics view

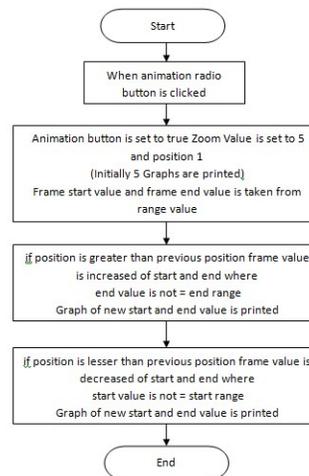
3. Zooming and Dialer

This module is triggered when the zoom button is activated and The graph is displayed with respect to zoom value. When clicked on zoom it is set to true and dialler operates for zooming. Here the initial zoom value = 5 and initial position = 0. if position is greater than previous position Zoom in is done that is position * zoom value i.e position into zoom value number .of graphs are printed and vice versa

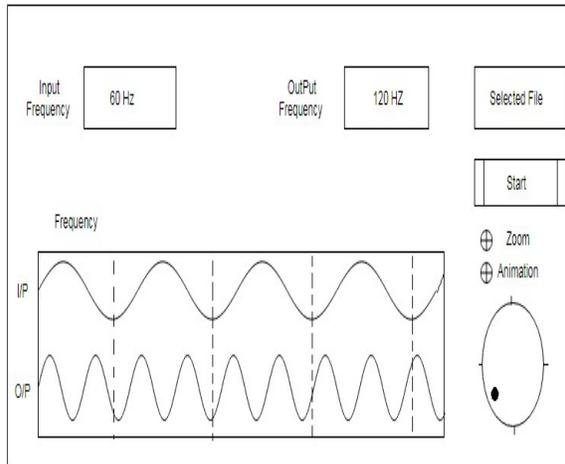


4. Animation

The input to this module is all the outputs from previous modules like start frame of video, end frame of video, zoom value, difference range. When the animation button is clicked it is set to true and zoom value is as same as before and start frame and end frame is stored in some variable. if position is greater than previous position next frame is taken considering present frame ,where end frame is not = end range. Graph of new start and end frame is printed and vice versa.



IV . Results and Discussion



The result shows the input video signal and the output video signal with the respective frequency. If any video frame is missing or deviating from the expected output the graph is printed in the red colour so makes viewer to easily identify the mistake. This feature of colour differentiation is not present in the CRO makes difficult to understand fault in the video signals that is transmitting. This proposed system each and every reading into a file which makes user to view the data later rather than again connecting to the software tool until new identifications is need this is one of the most important feature of the tool. Hence this tool is very useful and makes the user understanding very easy and clear. This tool is not only referred to video signal this tool can be built for any kind of signal. Hence bringing the software technology to the world in very different perspective.

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