

WEEK NO:13.....

FOR THE WEEK ENDING

Sunday.....23.....1.04.....1.....2022.....

TRAINING LOCATION

....IE Robotics (Pvt) Ltd.

DAY		DATE	BRIEF DESCRIPTION OF THE WORK CARRIED OUT
		Monday 03/28	* Finalized the User Interface's form layout design. * Add necessary methods to access camera and show video stream through the "picture box" tool in forms.
		Tuesday 03/29	* Changed the target (.Net) framework's version to 4.6.1 and made necessary changes in the code to be compatible with it. * Downgraded Emgu CV package to 4.5.1 version.
		Wednesday 03/30	* Add initial methods of camera calibration using functions in Emgu CV. (image preprocessing / chessboard pattern detection) * Add methods to generate real world object points that are correspond to detected corners in the chessboard images. * Add guideliness for novice ^{user} user to make it easy to understand how to use the software.
		Thursday 03/31	* Implement methods to handle XML files to save calibrated camera data in such a way that the format is compatible with C++ opencv.
Sunday 04/03	Saturday 04/02		<p style="text-align: center;">} - Weekend - {</p>

DETAILS AND NOTES OF WORK CARRIED OUT, PROBLEMS ENCOUNTERED AND HOW SOLVED ETC., DIMENSIONS AND SKETCHES TO BE GIVEN WHEREVER POSSIBLE

Primary work carried out in the week. * Design the layout of the user interface for an application to carry out camera calibration.

Engineer - II - Computer

* Implemented methods for its buttons and other ~~and~~ components to get the job done.

~~Challenges~~ Problems } ① At first the latest version of Emgu CV was used to implement the application and it was found that it lacks some of the documentation. Therefore I had to down grade the version to 4.5.1. to carry out the implementation further.

Note that "Emgu CV" is a wrapper for "Open CV" open source computer vision library, for (.NET) compatible languages such as C# or "C sharp".

② writing data to XML files - The data that is obtained through camera calibration must be written to a file for future use. Here the writing should be done in such a way that the format is compatible with "OpenCV C++", where we run pipework the actual object detection framework.

SIGNATURE OF TRAINEE

REMARKS AND CERTIFICATION BY THE ENGINEER /T.O

Satisfactory

L.E. ROBOTICS (PVT.) LTD.

Jaknir
Engineer - In - Charge

DATE : 05/04/2022

DESIGNATION AND SIGNATURE

FOR THE WEEK ENDING

TRAINING LOCATION

Sunday..... 10..... 04..... 2022....

...LF..... Robotics..... (Pvt)..... Ltd.

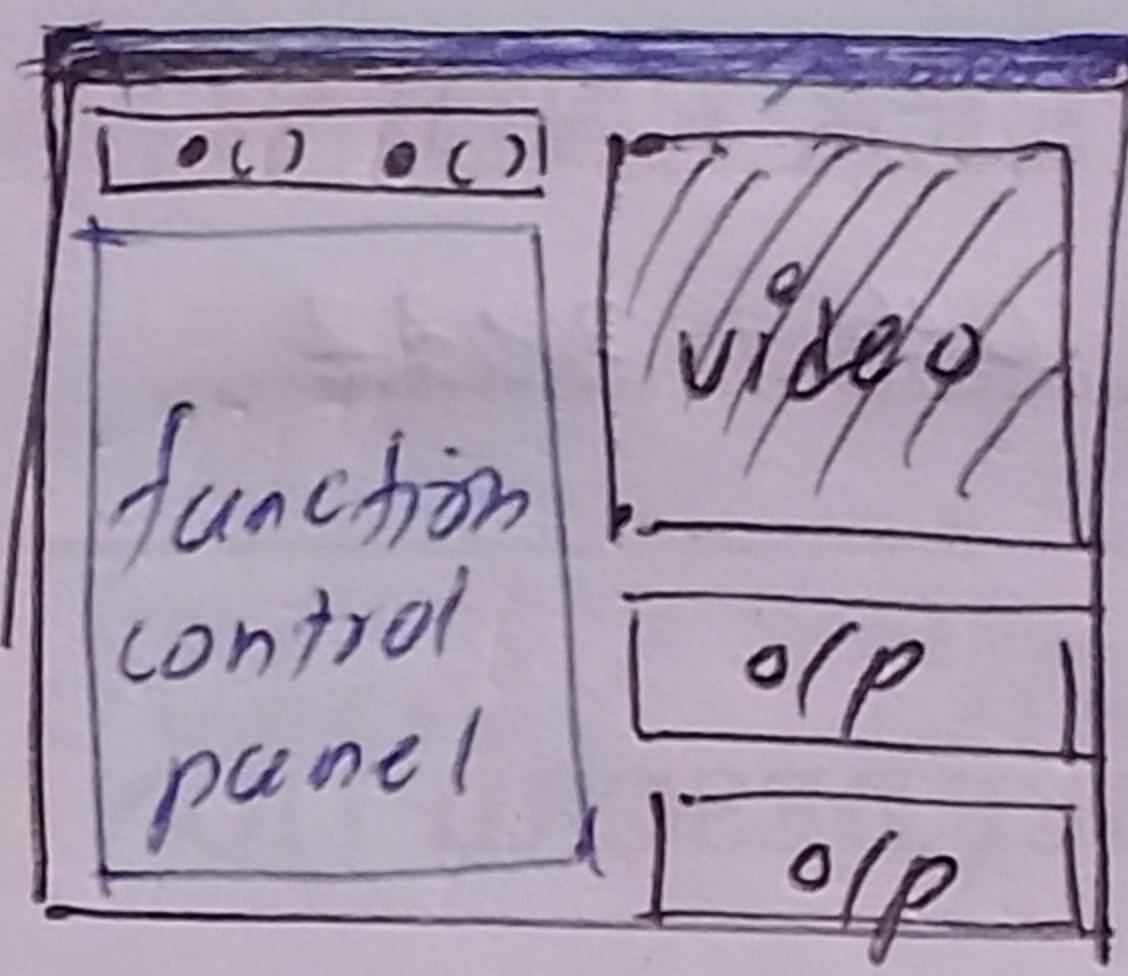
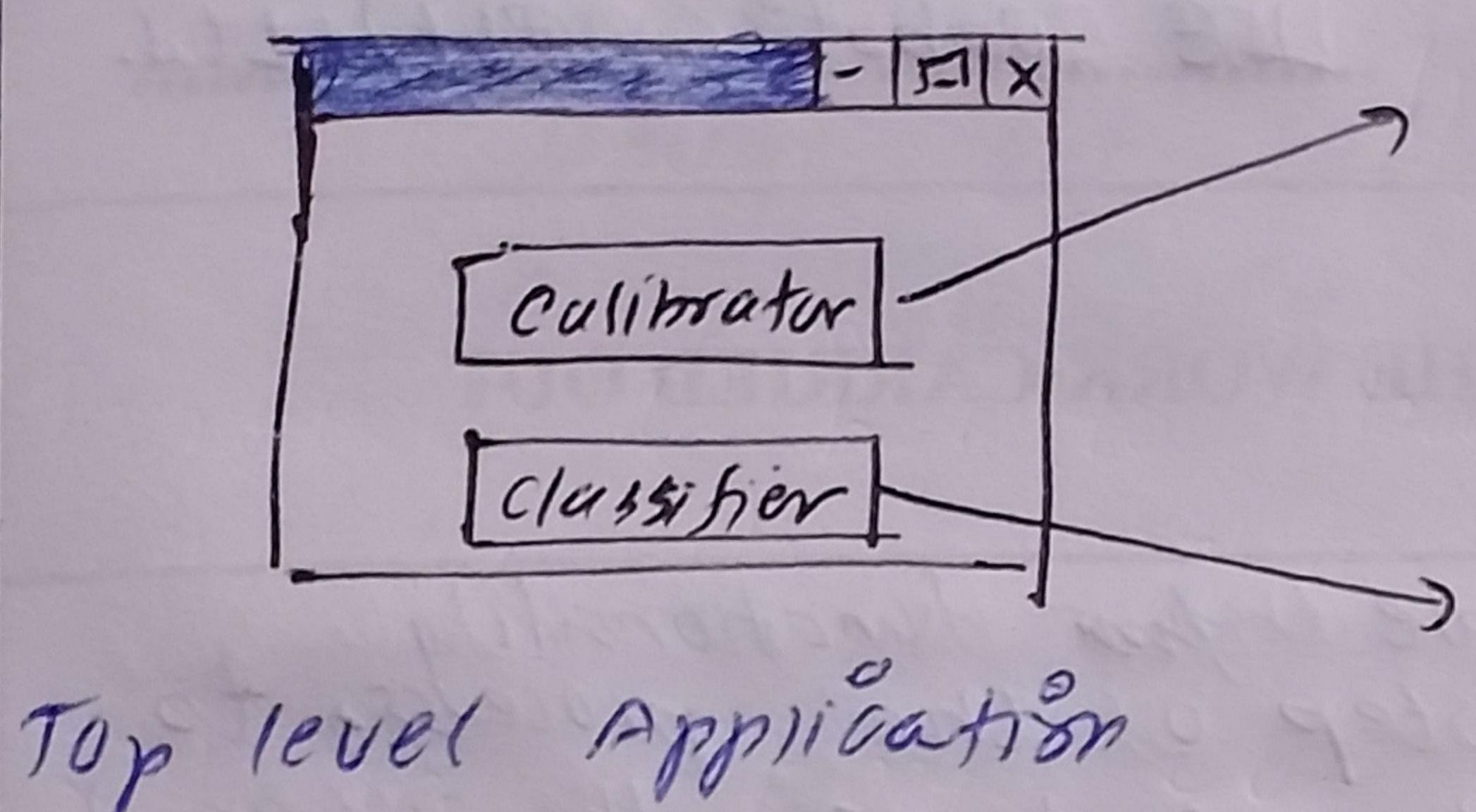
DAY	DATE	BRIEF DESCRIPTION OF THE WORK CARRIED OUT
Monday	04/04	<ul style="list-style-type: none"> * Initialized implementing the application for object classification trainer. * Designed a user interface for the mentioned App. * Debugged some bugs in the code using of that App.
Tuesday	04/05	<ul style="list-style-type: none"> * Implemented methods to extract objects' contour and save the it with a name to a dictionary type data structure. * Investigated about the optimal methods to get required features from object's image.
Wednesday	04/06	<ul style="list-style-type: none"> * Complete the basic functionality of the mentioned Application. * Documented necessary details to build the project without problems in visual studio.
Thursday	04/07	<ul style="list-style-type: none"> * Extended functionality of the Application to provide steps to use the application (for beginner users.) * Add button enable/disable sequence for buttons to make it easy to understand how to use the software.
Friday	04/08	<ul style="list-style-type: none"> * Restructure the Application to have a hierarchical structure rather than a flat user interface.
Saturday	04/09	} - weekend -
Sunday	04/10	

DETAILS AND NOTES OF WORK CARRIED OUT, PROBLEMS ENCOUNTERED AND HOW SOLVED ETC., DIMENSIONS AND SKETCHES TO BE GIVEN WHEREVER POSSIBLE

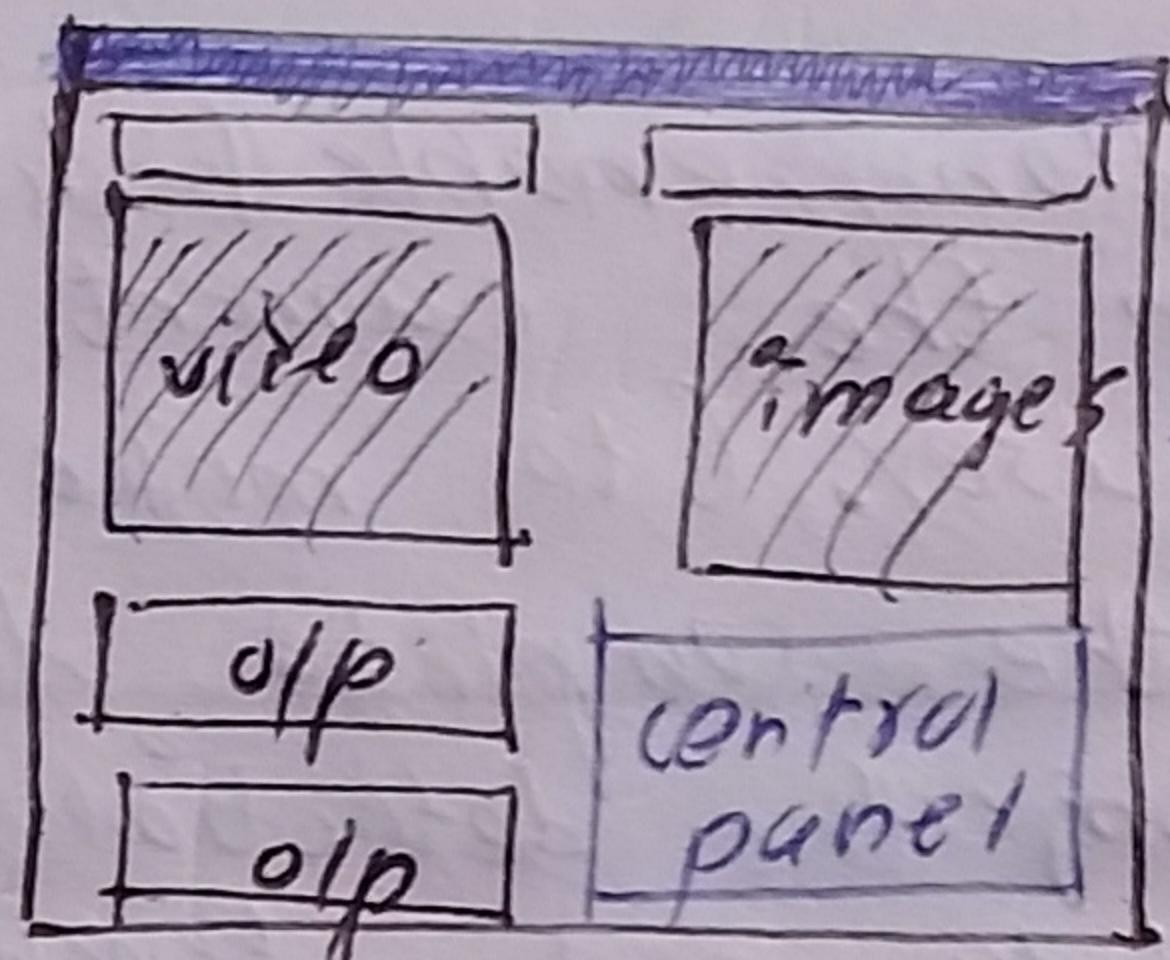
Primary work carried out in the week: Implemented a complete ~~test~~ Application to

- ① calibrate a camera
- ② Train the ~~the~~ object classifier model used in object detection.

user interface for camera calibration and object classifier trainer.



← user interface layout
of camera calibrator



← user interface layout
of classifier trainer.

Problem encountered : The opencv version that is used inside ~~Open~~ (Emgu.CV) [the C# wrapper for opencv] is compiled for (x86) architecture and therefore the our application must be built targetting (x86) architecture, otherwise it will give build errors!

Dinesh Kumar

SIGNATURE OF TRAINEE

REMARKS AND CERTIFICATION BY THE ENGINEER /T.O

Satisfactory

L.E. ROBOTICS (PVT.) LTD.

Jakir

Engineer - III - Charge

DATE : 12/04/2022

DESIGNATION AND SIGNATURE

FOR THE WEEK ENDING

Sunday.....17.....1.04.2022.....

TRAINING LOCATION

...LE... Robotics (Pvt) Ltd.

DAY	DATE	BRIEF DESCRIPTION OF THE WORK CARRIED OUT					
		Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	04/16	* Added button enable / disable face functionality depending on the current step of the process, to guide the user. (to make it easy to use the software.) * Verified the complete functionality of the the application.					
	04/12	* Updated object detection framework to get the calibration data and template objects' data by reading XML files generated by the previously mentioned application. * Add an object classification algorithm to the object detection framework. - Day prior to Sinhala and Tamil New Year -					
	04/13			- Sinhala and Tamil new year -			
	04/14			- Good Friday -			
	04/15						J - weekend -
Sunday	04/17						

DETAILS AND NOTES OF WORK CARRIED OUT, PROBLEMS ENCOUNTERED AND HOW SOLVED ETC., DIMENSIONS AND SKETCHES TO BE GIVEN WHEREVER POSSIBLE

Primary work carried out in the week

3 = * Verified the functionality of camera calibrator and object classifier trainer Applications.
 * Add methods to read XML files to get calibration data and template objects' data. (to the main object detection framework)

heuristic 8 * New methods to guide the user of an application towards the to get the job done using the software without doing unnecessary things.
(e.g: interactive guidelines / button enable / disable functionality depending on the current step of the process.)

Hijrah
SIGNATURE OF TRAINEE

REMARKS AND CERTIFICATION BY THE ENGINEER /T.O

Satisfactory

L.E. ROBOTICS (PVT.) LTD.

Daksha

Engineer - In - Charge

DATE : 19/04/2022

DESIGNATION AND SIGNATURE

FOR THE WEEK ENDING

TRAINING LOCATION

Sunday 24.04.2022.....

L.E. Robotics (Pvt) Ltd.

DAY	DATE	BRIEF DESCRIPTION OF THE WORK CARRIED OUT
Monday	04/18	<ul style="list-style-type: none"> * Documented, how to use the "camera calibrator" software. * Added extensions to the software to view corresponding user manuals.
Tuesday	04/19	<ul style="list-style-type: none"> * Completed the development of the "classifier trainer" application. * Composed new documentation on how to use the software to train the object detection model.
Wednesday	04/20	<ul style="list-style-type: none"> * Finalized user manuals of "camera calibrator" and "classifier trainer" software. * Checked performance of the object classification and identified its drawbacks to improve it.
Thursday	04/21	<ul style="list-style-type: none"> * Added required functionalities to send the files that are generated by Windows software to the Raspberry Pi, (where the actual object detection happens).
Friday	04/22	<ul style="list-style-type: none"> * Created a separate software to transfer files between Windows PC and the Raspberry Pi. * Linked that software to the main software to make the overall process easy.
Saturday	04/23	<p style="text-align: center;">} - weekend -</p>
Sunday	04/24	

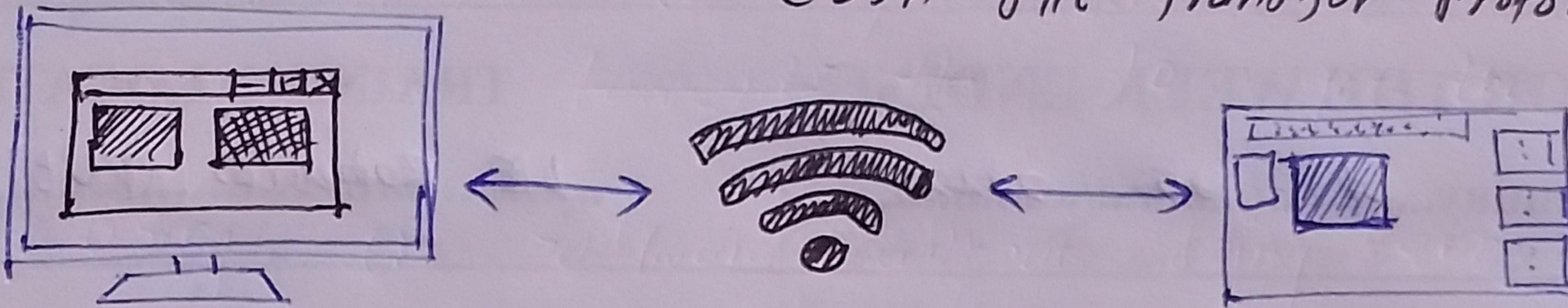
DETAILS AND NOTES OF WORK CARRIED OUT, PROBLEMS ENCOUNTERED AND HOW SOLVED ETC., DIMENSIONS AND SKETCHES TO BE GIVEN WHEREVER POSSIBLE

Primary work carried out in the week:

3 : * Documented "camera calibrator" and "classifier Trainer" applications.

* Implemented methods to transfer the generated files by the mentioned applications to Raspberry Pi.

~~File transferring between~~ to a remote host, using SFTP
(SSH File Transfer Protocol).



PC which the "camera calibrator" and the "classifier-trainer" ~~are~~ applications are run. Both are connected to the same network!

Raspberry Pi Single Board computer where the object detection framework is run.

* SFTP (SSH File Transfer Protocol) : is an extension to the SSH (Secure Shell) protocol. The SFTP provides methods to access/ file transfer / and file management over any reliable data stream. (Here I have used the Local Area Network ~~with~~ a Local Area Network established through a WiFi Router.)

* "WinSCP" (a free and open source file transfer protocol) package in visual studio was used for implementation.

REMARKS AND CERTIFICATION BY THE ENGINEER /T.O

Good

Mijwan
SIGNATURE OF TRAINEE

L.E. ROBOTICS (PVT.) LTD.

Jakir
Engineer - In - Charge

DATE : 26/04/2020

DESIGNATION AND SIGNATURE