Resources for Custom HMD

I. **Expense table for design of CHORD (Customizable Head mount device for OculaR disorder Detection)**

Sr. no	Name	Role	Qty	Price
1	**Electronic components-**			
	1. Raspberry Pi 4 with 8 GB RAM B series	Microprocessor	1	$ 75
	2. 7-inch LCD Screen	Display	1	$ 60
	3. MPU6050 sensor	Accelerometer	1	$ 2
	4. ATmega32U4	Microcontroller	1	$ 6
	5. Joystick	Peripheral	1	$ 1
	6. Others (connecting wires, PCB, etc.)	Connections	-	$ 4
2	**Design Components-**			
	1. 3D Printer PLA Spool 300 gram	HMD casing	1	$ 4
	2. VR lens (pair) with diameter 40mm	HMD design	1	$ 2
	3. Head strap for HMD	HMD design	1	$ 3
			TOTAL	**$ 157**

(Prices from the official sources)
(Rounded off to nearest 10's multiple)

Resources for Custom HMD

II. **Stipulated output log for section 4.1 Interfacing motion tracking unit**

Var X	0	Var Y	0	Pointer X	0	Pointer Y	0
Var X	410	Var Y	112	Pointer X	5	Pointer Y	4
Var X	11	Var Y	371	Pointer X	3	Pointer Y	0
Var X	129	Var Y	354	Pointer X	5	Pointer Y	3
Var X	462	Var Y	171	Pointer X	0	Pointer Y	0
Var X	277	Var Y	478	Pointer X	0	Pointer Y	5
Var X	125	Var Y	441	Pointer X	0	Pointer Y	1
Var X	447	Var Y	321	Pointer X	3	Pointer Y	1
Var X	45	Var Y	301	Pointer X	4	Pointer Y	5
Var X	361	Var Y	128	Pointer X	2	Pointer Y	5
Var X	45	Var Y	391	Pointer X	4	Pointer Y	1
Var X	0	Var Y	458	Pointer X	0	Pointer Y	1
Var X	193	Var Y	126	Pointer X	5	Pointer Y	3
Var X	368	Var Y	439	Pointer X	2	Pointer Y	3
Var X	328	Var Y	407	Pointer X	3	Pointer Y	0
Var X	400	Var Y	171	Pointer X	4	Pointer Y	2
Var X	149	Var Y	431	Pointer X	0	Pointer Y	1
Var X	259	Var Y	180	Pointer X	2	Pointer Y	5
Var X	185	Var Y	387	Pointer X	1	Pointer Y	1
Var X	272	Var Y	422	Pointer X	3	Pointer Y	4
Var X	34	Var Y	107	Pointer X	0	Pointer Y	1
Var X	158	Var Y	105	Pointer X	5	Pointer Y	0
Var X	277	Var Y	41	Pointer X	3	Pointer Y	5
Var X	170	Var Y	266	Pointer X	2	Pointer Y	0

Resources for Custom HMD

Var X	375	Var Y	215	Pointer X	0	Pointer Y	0
Var X	434	Var Y	127	Pointer X	5	Pointer Y	0
Var X	259	Var Y	306	Pointer X	4	Pointer Y	0
Var X	114	Var Y	278	Pointer X	4	Pointer Y	5
Var X	266	Var Y	95	Pointer X	1	Pointer Y	3
Var X	345	Var Y	36	Pointer X	0	Pointer Y	4
Var X	10	Var Y	357	Pointer X	2	Pointer Y	5
Var X	502	Var Y	118	Pointer X	2	Pointer Y	3
Var X	67	Var Y	500	Pointer X	4	Pointer Y	0
Var X	68	Var Y	470	Pointer X	4	Pointer Y	1
Var X	284	Var Y	291	Pointer X	1	Pointer Y	4
Var X	30	Var Y	191	Pointer X	0	Pointer Y	2
Var X	486	Var Y	395	Pointer X	2	Pointer Y	0
Var X	226	Var Y	104	Pointer X	3	Pointer Y	3
Var X	478	Var Y	214	Pointer X	4	Pointer Y	4
Var X	414	Var Y	400	Pointer X	0	Pointer Y	0
Var X	216	Var Y	468	Pointer X	3	Pointer Y	5
Var X	274	Var Y	147	Pointer X	4	Pointer Y	2
Var X	167	Var Y	466	Pointer X	1	Pointer Y	5
Var X	182	Var Y	203	Pointer X	3	Pointer Y	4
Var X	429	Var Y	315	Pointer X	2	Pointer Y	3
Var X	472	Var Y	439	Pointer X	1	Pointer Y	1
Var X	108	Var Y	259	Pointer X	1	Pointer Y	0
Var X	115	Var Y	353	Pointer X	3	Pointer Y	4

Resources for Custom HMD

III. Resources for section 4.3 Design and Modelling of CHORD Prototype

1) Questionnaire-

1. What specific suggestions do you have to improve this device?

2. What specific things did you like about this device?

3. What is your overall assessment on using this device? Trash/Poor/Ok/Good/Smash

4. Demographic Details:
   - Name
   - Gender
   - Age

8. Do u ever used HMD device? Yes /No

9. How familiar are you with using HMD device? On a scale from 1 to 5

2) Study results-

| Issue	Percentage
Display inconvenience	85
Latency in the experiment	60
Handling problem	40
HMD design	35
Field of View	30
Complexity in learning	20
Weight of the HMD	15

3) Pareto chart-
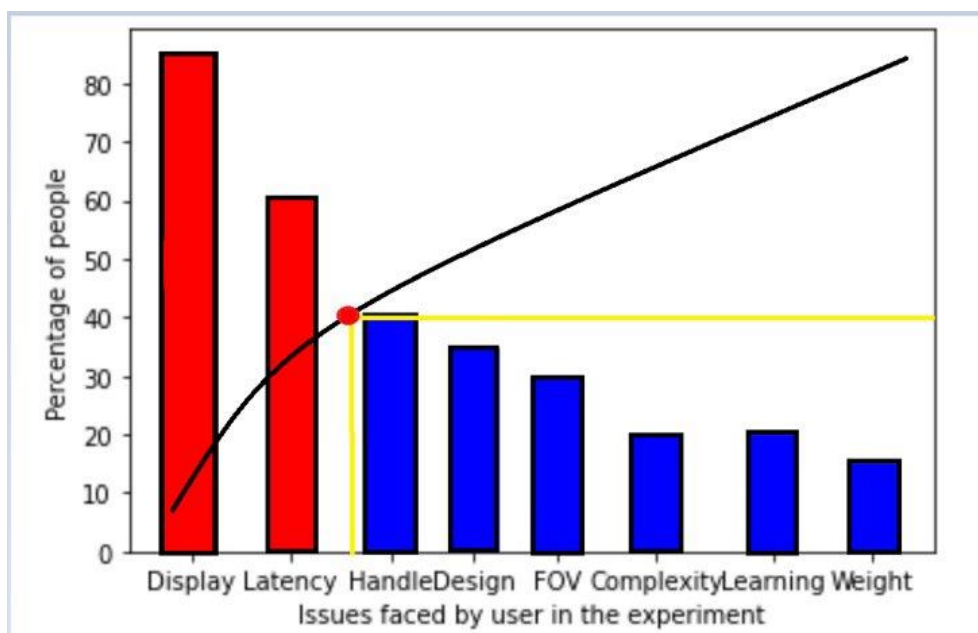
Resources for Custom HMD

IV.   Resources for section 5.3 Screen resolution-

- **Experiment** –
The VR scene involves using a custom-made environment with two opaque objects. The two objects are placed at an adjustable distance with respect to each other. The user can virtually navigate in forward and backward direction in the scene. The idea is to set the inter-object distance to a particular value and navigate the objects in backward motion until the two objects are distinguishable. The point at which two separated objects seem to be intersecting can be recorded corresponding to a particular screen configuration, and similarly, the test can be conducted for another iteration.
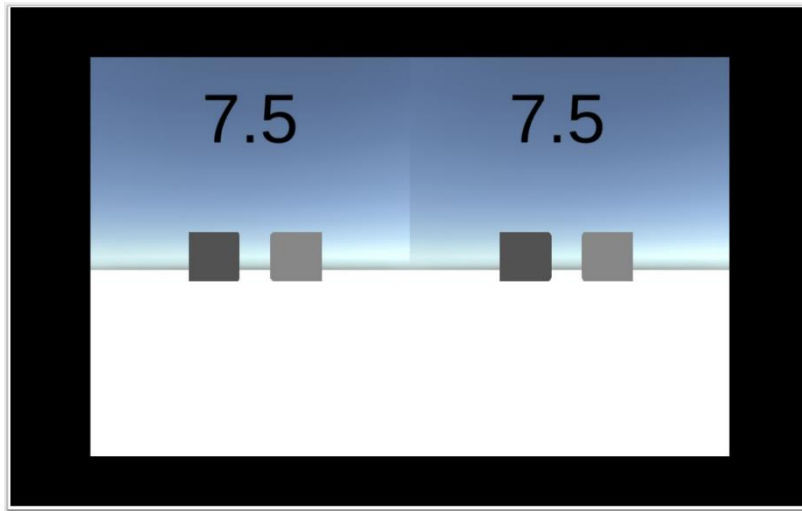
- **Results** –
Linux based OS on Raspberry Pi offers seven sets of screen configuration to test on 7-inch LCD. However, the resolution LCD offer is 800 x 600 pixels; the experiment is conducted from 640 x 480 to 1024 x 600 pixels. The virtual distance obtained corresponding to the resolution will be compared, and the highest distance will be recommended for VR scenes. The graphical comparison of screen resolution with virtual distance can be seen in figure below. As per experiment, the configuration 832 x 624, 800 x 600 and 1024 x 600 pixels record higher virtual distance where the two objects were distinguishable. The VR scene henceforth will be tested on 800 x 600 resolution or moreover 400 x 300 resolution per eye.