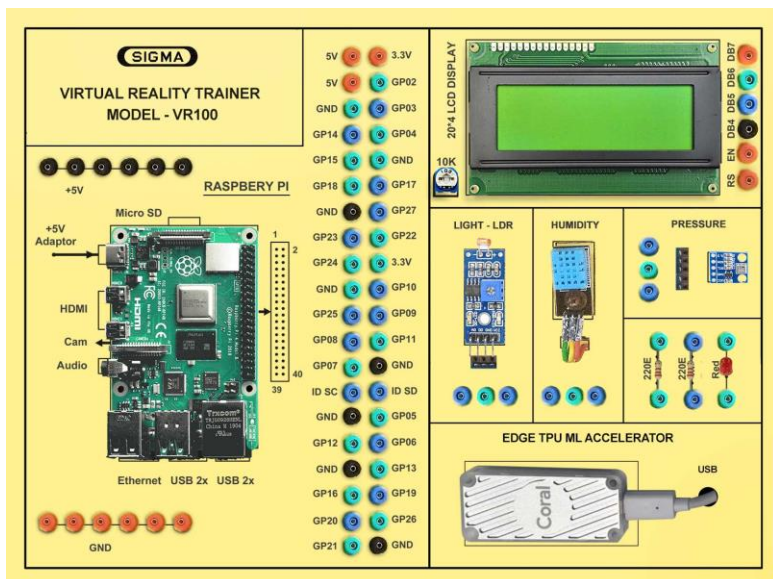




EXTENDED REALITY – XR TRAINER MODEL – XR100

This trainer has been designed with a view to provide practical and experimental knowledge of Extended Reality - XR technology used Digital marketing and other fields.

SPECIFICATIONS



1. Microcontroller Board

1. A57 Microcontroller
2. CPU : Quad-core ARM A57 @ 1.43 GHz
3. OS : Linux
4. RAM : 4 GB 64-bit LPDDR4 25.6 GB/s
5. Ethernet Connectivity : Gigabit Ethernet
6. Wifi Connectivity : 802.11 b/g Wireless LAN Dual-Band 2.4/5.0 GHz, 3G
7. Bluetooth Connectivity : Bluetooth 5.0
8. USB Connectivity : USB 3.0 – 4 Nos. – Micro USB Port
9. Storage : microSD – 32 GB
10. Camera : 2 x MIPI CSI-2 DPHY lanes
11. Display : HDMI and Display port
12. Protocols : GPIO, I2C, I2S, SPI, UART
13. Power - 5V, 4A DC

2. Sensors:

1. Temperature and Humidity– DHT11
2. Ambient Light Sensor – LDR
3. Ambient Pressure Sensor – BMP180

3. Modules and Hardware:

1. 20 X 4 - LCD Display
2. LEDs and Resistors
3. 2 mm interconnection Sockets

4. AI GPU Accelerator

1. Google Edge TPU ML accelerator
2. 4 TOPS total peak performance
3. 2 TOPS per watt
4. USB 3.0 (USB 3.1 Gen 1) Type - C socket

5. Accessories:

1. 2 mm interconnection Sockets : On Board
2. 2 mm Banana Jumper Cable : 20 Nos
3. 2mm Banana Jack to Single pin jumpers : 2 Nos
4. USB to Micro USB Cable : 2 Nos
5. Ethernet Cable : 1 No
6. HDMI to HDMI Cable : 1 No
7. VGA 15 pin Male to HDMI Converter : 1 No
8. Power Supply Adaptor : 5V, 4A DC
9. SD Memory Card with Codes for All Experiments : 32 GB - 2 No
10. 16 GB Pen Drive : 1No
with Software, Library, Drivers, Codes, Soft Copy of Manual & Mobile App
11. Printed Practical Manual : 1 No
12. E-Books for AI Subject : 10 Nos
13. Mp4 Video Class for AI Subjects : 100 Nos
14. Power Supply : 230V AC, 50 Hz
15. Operating Conditions : 0-40 °C, 85% RH
16. Mains Cord : 1 No – On Board

6. Cabinet and PCB

The complete circuit diagram is screen printed on component side of the PCB with circuit and Parts at the same place. The PCB with components on front side is fitted in elegant wooden box having lock and key arrangement. The acrylic cover is fitted on PCB to safeguard parts. It works on 230 V AC Supply.

THEORY EXPERIMENTS

A. Introduction to Augmented, Virtual and Mixed Reality - AR/VR/MR

1. Definition, History and Use Case
2. Key Characteristics
3. Key features
4. Tracking Devices
5. Vendors
6. Companies
7. Trends
8. The future of AR/MR/VR.

B. Understanding Vuforia Augmented Reality

9. To understand Vuforia Augmented Reality in Unity.
10. What is Augmented Reality?
11. What is Vuforia?
12. To create Augmented Reality applications
13. To download and install Vuforia and Unity 3D
14. To download the Markers and Code
15. To create a simple AR cube in Vuforia
16. To solve the blank texture issue in Vuforia
17. To write a script to make your cube spin
18. To understand AR Movie Projector to watch videos in AR
19. Augmented Reality Video Playback in Vuforia and Unity
20. To Implement an Augmented Reality Virtual Buttons in Vuforia Tutorial
21. To understand leap Motion AR
22. Text Detection and Recognition in Vuforia and Unity 3D environment
23. To create Cylinder Target on Vuforia Developer
24. To download and install Vuforia 7 and Unity 2017.3
25. To understand ARCore Experience with ground plane technology
26. How to export to Android Build in Unity
27. How to scan 3D Object in Augmented Reality
28. To understand Visual Inertial Simultaneous Localization & Mapping (VI-SLAM)
29. To make 2D platform game template using the standard Unity Assets.
30. To recreate the Unreal Engine Fight Scene
31. To understand Internet of Things Augmented Reality - IOTAR

PRACTICAL EXPERIMENTS

1. To set up out Particle Photon and blink an LED over the Web.
2. To learn the basics of Augmented Reality by setting up Vuforia within the Unity environment, downloading it to installation, as well as licensing.
3. To make IoTAR - Internet of thing with Augmented Reality - with a simple web dashboard in AR.
4. To connect objects differently using AR.
5. To use a light dependent resistor - LDR to control the light intensity of an augmented reality camp fire.
6. To obtain the level of water within a plant using a particle photon and then this data is sent to the cloud and retrieved using the Unity SDK using JSON script.
7. The data is then visualized in Augmented Reality using the Vuforia Asset package.
8. To understand Rul-AR Augmented reality Measuring Tool and detect two markers.
9. The vectors from these markers are obtained and thus through the magic of math, the displacement or projected 3D distance onto the x, y and z axis with respect to the target vectors. This is a great application if you would want to develop an app that can measure 3D distance in AR, just by placing objects in the scene to get relative distance. The only thing left to do is calibrate the distance to real world coordinates. This video uses multi marker target detection in Vuforia.
10. To use Multiple Targets in Vuforia
11. To look into a 3d skeleton and visualise heart beating in real time from a pulse heart rate sensor connected to particle photon.
12. To visualise the temperature of any liquid chromatically i.e if your drink is hot, you AR cup will appear red.
13. To visualise force in augmented reality on a gauge as a percentage of total force using a force sensitive resistor
14. To use Particle photon to detect alcohol gas and augments your reality with emissions of virtual gas
15. To fetch weather data off the web i.e to retrieve the weather in AR for any city around the world in real time.

CLASS ROOM TRAINING – ONLINE AND OFFLINE

The training includes Single user Classroom / laboratory teaching, learning and simulation software module. The content has easy explanation of various complex topics with animation and simulation for ease of student learning. It also supports learning through videos, graphs, charts, along with mandatory rich content and theory to understand fundamental concepts, interactive learning objects, FAQ, MCQ etc. The content is supplied in digital online access or license protection.

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