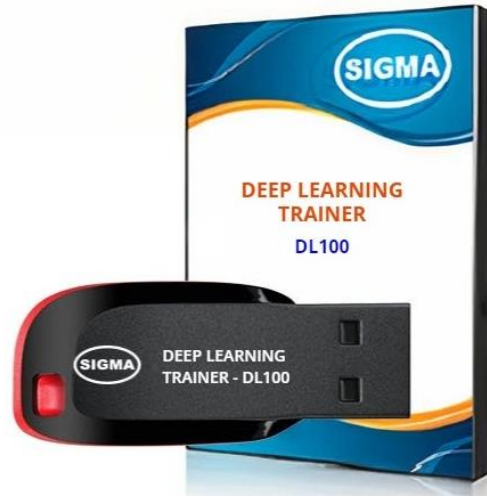
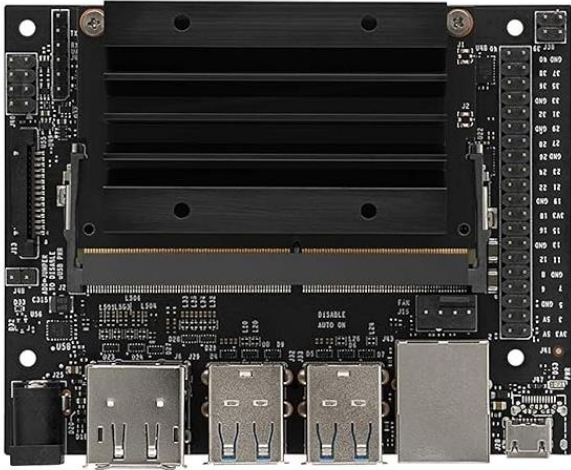




DEEP LEARNING TRAINER

MODEL-DL100



This trainer has been designed with a view to provide practical and experimental knowledge of Deep Learning with Artificial Intelligence (AI) hardware and software programming.

SPECIFICATIONS

A. Microcontroller

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

B. Other Parts

1. Wifi Node : Wireless 2.4GHz Wifi Module – ESP32
2. LCD Display : 20 X 4
3. Display Monitor : 15 Inch LED
4. Storage : External SSD - 128GB
5. Camera : External Logitech – 270 – USB
6. Key Board : External Wireless
7. Mouse : External Wireless

C. 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

EXPERIMENTS

A. Theory Experiments

1. To understand theory and working of Deep Learning
2. To understand Operating System for Deep Learning
3. To understand Protocols used for Deep Learning
4. To understand USB, HDMI, Display Port Interface of Deep Learning
5. To understand Ethernet Cable Interface for Deep Learning
6. To understand micro SD Card Interface for Deep Learning
7. To understand that how to connect 20 x 4 LCD Display to Deep Learning

8. To understand theory of Block diagram and its internal Structure of Deep Learning
9. To understand History of Deep Learning
10. To understand Fundamentals of Deep Learning
11. To understand theory of Basic of Deep Learning and its architecture
12. To understand Deep Learning Programming Language – C, C++, Python and R
13. To understand Libraries and Algorithms used for Deep Learning
14. To understand Deep Learning Protocols

15. To understand Deep Learning **Applications** in following Areas :
 - a. Natural Language Processing – NLP
 - b. Internet of Things – IOT
 - c. Preventive Maintenance
 - d. Cyber Security
 - e. Agriculture and Food Industry
 - f. Remote Healthcare Monitoring and Telemedicine
 - g. Environment Monitoring and Forecast
 - h. Warehouse and Logistics Monitoring
 - i. Retail Analysis
 - j. Intelligent Traffic Management
 - k. Energy Monitoring and Control
 - l. Home and Building Automation

16. To understand **algorithms** used for applications in Deep Learning :
 - a. TensorFlow – To make AI Frame work
 - b. Keras - For High Performance Numerical Computation
 - c. PyTorch
 - d. GoogleAI
 - e. Amazon web services - AWS
 - f. Caffe
 - g. Anaconda Navigator
17. To understand **software** used for Deep Learning :
 - a. Linux OS
 - b. NVIDIA JetPack having Board support package - BSP
 - c. NVIDIA CUDA
 - d. cuDNN
 - e. TensorRT
 - f. Anaconda Navigator
 - g. Jupyter Notebook
 - h. Computer Vision
 - i. GPU computing
 - j. Multimedia Processing
18. To understand **Libraries** for applications in Deep Learning :
 - a. numpy
 - b. pandas
 - c. scikit-learn
 - d. matplotlib
 - e. seaborn
 - f. pycuda
 - g. cv2
 - h. caffe
 - i. torch
 - j. pytorch
 - k. TensorRt
19. To understand **Mathematics** used for Deep Learning :
 - a. Linear Algebra – Linear Equations, Matrixs, Vectors
 - b. Calculus – Differentiation, Integration, Gradient Descent,
 - c. Statistics – Population, Parameter, Sample, Variable, Probability

B. Practical Experiments

1. To understand theory of Artificial Neural Networks - ANN
2. To understand theory of Convolutional Neural Network - CNN
3. To understand theory of Recurrent Neural Network - RNN
4. To understand theory of Generative Adversarial Network – GAN
5. To understand theory of Graph Neural Network - GNN
6. To understand theory of StyleGAN Network – SGNN
7. To understand theory of CycleGAN - CGNN
8. To understand theory of Deep Convolutional Generative Adversarial Network – DCGAN
9. To understand theory of GauGAN
10. To understand theory of Unconventional Neural Networks – UNN
11. To understand theory of Multiple Neural Networks – MNN
12. To understand theory of Mask R-CNN
13. To understand theory of Faster R-CNN
14. To understand theory 3D Convolutional Neural Network
15. To understand theory of Think Neural Network – THNN
16. Fully Convolutional Networks (FCN)
17. To understand theory of Movidius NCS - Neural Computer Stick
18. To understand theory of Single Shot Detector Code for SSD Model
19. To understand Complex Mathematics used for Deep Learning
20. To understand theory of LeNet Architecture
21. To understand theory of ResNet Using Keras Residual Network
22. To understand Deep Learning in Medical Science
23. Predicting Lungs Disease using Deep Learning
24. To use 3D Convolutional Neural Network for Lung Cancer Detection
25. Malaria Disease Detection using Deep Learning
26. To understand Long Short Term Memory – LSTM - with Example
27. Stock Price Prediction and Forecasting using Stacked LSTM - Deep Learning
28. Monte Carlo Dropout Layers In Deep Learning
29. To understand - What Is Transfer Learning in Deep Learning
30. To demonstrate Neural Networks
31. To demonstrate Convolutional Neural Networks
32. To demonstrate Plant leaf disease detection using Mask R-CNN Image Segmentation

33. To demonstrate Deep Learning Applications in Real Life
34. To demonstrate Backpropagation and Gradient Descent In Neural Networks
35. To demonstrate Various Weight Initialization Techniques in Neural Network
36. Training Neural Networks on GPU vs. CPU Performance Test
37. How to choose number of hidden layers and nodes in Neural Network
38. Encoder And Decoder- Neural Machine Learning Language Translation With Keras
39. Instance Segmentation Using Mask R-CNN on Custom Dataset
40. Instance Segmentation Web Application Using Mask R-CNN and Flask
41. Video Classification with a CNN-RNN Architecture for Human Activity Recognition
42. Next Word Prediction using RNN like WhatsApp application
43. Language Translator using seq2seq Model with RNN

C. Deep Learning Applications

1. Image Classification with DIGITS
2. Object Detection with DIGITS
3. Object Detection over KITTI dataset with DIGITS
4. Semantic Segmentation using DIGITS
5. Medical Image Segmentation using DIGITS
6. Signal Processing using DIGITS
7. Train a Generative Adversarial Network using DIGITS
8. Training an image auto encoder with DIGITS
9. Binary Segmentation using DIGITS
10. Linear Classification with Tensor Flow
11. Image Classification using Tensor Flow
12. Demonstration of remote inference of Deep Learning model using Embedded GPU board

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.

Contact US

Registered Office

SIGMA TRAINERS AND KITS
E-113, Jai Ambe Nagar,
Near Udgam School,
Drive-in Road,
Thaltej,
AHMEDABAD-380054. INDIA.

Factory

SIGMA TRAINERS AND KITS
B-6, Hindola Complex,
Below Nishan Medical Store,
Lad Society Road,
Near Vastrapur Lake,
AHMEDABAD-380015. INDIA.

Contact Person

Prof. D R Luhar – Director

Mobile : 9824001168

Whatsapp : 9824001168

Phones:

Office : +91-79-26852427

Factory : +91-79-26767512
+91-79-26767648
+91-79-26767649

E-Mails :

sales@sigmatrainers.com

drluhar@gmail.com