Assignment questions - Students need develop the module using DL concepts

Unit	Question 1	Question 2	Question 3
1.	1) Autoencoders based on neural networks You can create a handwriting recognition tool using the MNIST dataset as input. MNIST is a manageable, beginner-friendly data source that can be used to generate images of handwritten numbers.	2) Convolutional neural network model Convolutional neural networks or CNNs are typically applied to analyze visual imagery. This architecture can be used for different purposes, such as for image processing in self-driving cars.	3) Credit scoring system Loan defaulters can stimulate enormous losses for banks and financial institutions. Therefore, they have to dedicate significant resources for assessing credit risks and classifying applications. In such a scenario, neural networks can provide an excellent alternative to traditional statistical models.You can design a credit scoring system based on artificial neural networks.

2.	4) Grammar Error Correction with Deep Learning Grammatical Error Correction as the name suggests is the process by which the detection and correction to an error in the text are done	5) Cats vs Dogs The cats vs dogs is a good project to start as a beginner in deep learning. You can build a model that takes an image as input and determines whether the image contains a picture of a dog or a cat.	6) Predict Next Sequence To start with deep learning, the very basic project that you can build is to predict the next digit in a sequence. Create a sequence like a list of odd numbers and then build a model and train it to predict the next digit in the sequence. A simple neural network with 2 layers would be sufficient to build the model.

3.	7) Dog's Breed Identification How often do you get stuck thinking about the name of a dog's breed? There are many dog breeds and most of them are similar to each other. We can use the dog breeds dataset and build a model that will classify different dog breeds from an image. This project will be useful for a lot of people.	8) Traffic Sign Classification The traffic sign classification project is useful for all autonomous vehicles. Machines are able to identify traffic signs from the image. You can use the GTSRB dataset that contains 43 different traffic sign classes. This is a good project to understand image classification.	9) Automatic Music Generation What if I told you that you can make music automatically. Yes, it is also possible with deep learning however the real challenge is to generate real music that is pleasant to hear. In this project, the midi file's data can be used to build an LSTM model that can generate new music never heard before.

4.	10) Recurrent neural network model	11) Cryptographic applications using artificial neural networks	12) Handwritten Text Recognition with TensorFlow
	You can attempt loading stock price datasets. You can train RNNs to predict what comes next by processing real data sequences one by one	Suppose the objective of your study is to investigate the use of artificial neural networks in cryptography. For the implementation, you can use a simple recurrent structure, trained by the back-propagation algorithm. You will get a finite state sequential machine, which will be used for the encryption and decryption processes	This project is the Handwritten Text Recognition (HTR) system implemented with TensorFlow or SimpleHTR. The Handwritten Text Recognition (HTR) system is implemented with TensorFlow (TF)
5.	13) Image denoising with Autoencoder	14) Automatic Features Extraction Using Autoencoder in Intrusion Detection System	15)Recommendation system using autoencoder for ex. Zomato, YouTube…
	Autoencoder is an unsupervised artificial neural network that is trained to copy its input to output. In the case of image data, the autoencoder will first encode the image into a lower-dimensional representation, then decodes that representation back to the image	Intrusion Detection System (IDS) can detect attacks by analysing the patterns of data traffic in the network. With a large amount of data that is processed in the IDS, then need to do a feature extraction to reduce the computational cost of processing raw data in IDS	An autoencoder is used for collaborative filtering tasks with the aim of giving product recommendations. An autoencoder is a neural network that learns to copy its input to its output in order to encode the inputs into a hidden (and usually low-dimensional) representation

1. Fetch data from satellite Lightsail-2 between dates 2019-08-10 and 2019-08-11 (yyyy-mm-dd)

2. Fetch 3 days worth of data from satellite Opssat

3. Display a dependency graph for data fetched in question 1 using polaris viz command and take a screenshot4. List all satellites from which polaris can fetch data

5. Use CNN and build a model that would classify images captured from a satellite as either waterbody, forest, dessert or cloud

6. Build a deep learning model that would learn from Environmental Sensor Telemetry Data and predict the ppm of smoke based on the data recorded

7. Create a deep learning model to predict fuel efficiency of a vehicle based on the age of the vehicle

7	Anvitha	Sanchi	10	Rohan	Rohin
Anomaly detection	Deepa	Anagha	1	Salaj	Sharath
GAN	Dhruv	Faisal	Colouring B/W photos	Shreyas	Supreeth
12	Diya	Anushka			
13	Jason		8	Srivatsa	Sumanth
3	Jatin	Jayanth R			
14	Sriniketh	Suhas	5	Vashista	

9	Manav	Manoj	12	Yadiki	Swamy
2	Mithun	Pannaga			
4	Putta Krishna	Shiya			

LAST DATE FOR Submission   28th Aug 2023 (dead line)

Late submission - 2 marks less for one week

Report to be submitted in the format - Concept and model - 2 pages,

Data set description - 1 page, link to data set

Link to program modules in Github or any public domain

Diagrams and flowchart with Hard copy of the report - 3 to 5 pages max.