



Vidyavardhini's College of Engineering and Technology

Department of Artificial Intelligence & Data Science

AY: 2025-26

Class:	AI	Semester:	VII
Course Code:		Course Name:	DL

Name of Student:	BARI ANKIT VINOD
Roll No. :	61
Assignment No.:	6
Title of Assignment:	
Date of Submission:	
Date of Correction:	

Evaluation

Performance Indicator	Max. Marks	Marks Obtained
Completeness	5	-
Demonstrated Knowledge	3	
Legibility	2	
Total	10	

Performance Indicator	Exceed Expectations (EE)	Meet Expectations (ME)	Below Expectations (BE)
Completeness	5	3-4	1-2
Demonstrated Knowledge	3	2	1
Legibility	2	1	0

Checked By

Name of Faculty : Ravneek Toshi

Signature :

Date :

Assignment No. - 6

- Q. 1) You want to create realistic images of animals for a new wildlife conservation application. Illustrate how you would use a GAN to achieve this, with an appropriate diagram of GAN architecture.
- ① GAN Overview -

A GAN is a two neural network competing against each other.

① Generator (G) -

- Takes random noise z as input
- Produces a synthetic image
- goal: generate images that look real enough

② Discriminator (D) -

- Takes an image as input
- outputs a probability that the image is real
- goal: distinguish b/w real images from dataset.

Training process -

Generator loss - Tries to maximize discriminator mistakes.

discriminator loss - tries to correctly classify real vs fake images.

adversarial training - both networks improve iteratively in a game.

② workflow generation - (Architecture) -

Random Noise (z)



Generator (G)



Generated image ($G(z)$)

Discriminator (D)



Real Image (x)
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Q. 2) If you want to do the deepfake analysis on social media, find which type of neural network is used to achieve this task. Justify your answer.

→ ① Types of networks -

↪ Primary choice - CNN

- Spacial feature extraction - deepfakes are essentially manipulated using neural networks. CNN's are excellent at capturing spacial images.
- ↪ Hierarchical feature learning - CNN's automatically learn low-level to high-level features.
- efficient for images - works well with frames of videos to detect subtle pixel-level artifacts introduction by deepfake generation.

② Supplementary Networks - RNN or LSTM

- used for video-based deepfake detection, where temporal consistency is important.
- why? RNN / LSTM captures temporal patterns across frames, such as unnatural eye blinking, facial movement inconsistency or lip-sync error.

③ Eg, architecture -

Video frame or Image Input



Convolutional layers



feature maps



LSTM / Temporal layers



fully Connected layers



Output: Real or fake

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