

VIVEKANAND EDUCATION SOCIETY'S INSTITUTE
OF TECHNOLOGY

Hashu Advani Memorial Complex, Collector's Colony, R C Marg, Chembur, Mumbai-
400074



Department of Artificial Intelligence and Data Science

Subject: AAI lab

Class: D16AD

Semester: 8

Roll No.: <u>60</u>	Name: <u>Subrata Daya Shankar Tapaswi</u>		
Exp. No.: <u>6</u>	Title: <u>To develop a Conditional GAN (CGAN) network</u>		
DOP:		DOS:	
GRADE	<u>0</u>	SIGNATURE:	<u>AP 22/3</u>

AAI - Experiment #6

• Aim: To develop a conditional GAN (CGAN) network to direct image generation process of the generator model

• Theory: CGAN extends the concept of GANs by introducing conditional information to both generator and discriminator. This allows for more controlled and targeted generation of data samples based on specific conditions.

• Generator: In CGAN, the generator takes both random noise and conditional information as input and learns to generate data samples conditional on provided information. The conditional statement could be ~~used~~ class labels, attributes or any other relevant information that guides the generation process.

• Discriminator: Similar to traditional GANs, the discriminator in CGAN receives both real and fake samples along with the corresponding conditional info. The discriminator learns to accurately differentiate b/w real and fake samples while considering the provided info.

• Conditional Adversarial Training: During training the generator aims to fool the discriminator by generating realistic samples conditioned on the provided samples/info.

• Loss F^h : Training objective of CGAN typically involves minimizing a loss f^h that balances the objectives of the generator and discriminator. In addⁿ to standard adversarial loss, CGANs often incorporate a conditional component that encourages generator to provide samples that align with it.

• Applications: CGANs have diverse applications including image-to-image translation, text to image synthesis, and conditional image generation. By providing conditional info, CGANs enable more precise control over the generated samples, making them suitable for various tasks requiring controlled generation processes.

• Conclusion: The experiment focused on develop CGAN network to direct the image generation process of the generator model. By incorporating conditional information into both the generator and discriminator, the CGAN enabled more targeted and controlled generation of data samples based on specific conditions.