INFOSOFT IT SOLUTIONS

Training | Projects | Placements

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GENERATIVE ADVERSARIAL NETWORKS [GANs]

Introduction to GANs

- Overview of Generative Models
- Introduction to GANs
- History and Evolution
- Applications of GANs

GAN Architecture

- Generator and Discriminator Networks
- Loss Functions in GANs
- Training Dynamics
- Common Challenges and Solutions

Types of GANs

- Deep Convolutional GANs (DCGANs)
- Conditional GANs (cGANs)
- CycleGANs
- Wasserstein GANs (WGANs)
- Progressive Growing GANs

Implementing GANs

- Setting Up the Environment
- Building a Basic GAN
- Training a GAN on Image Data
- Evaluation Metrics for GANs

Advanced Topics

- Techniques for Stabilizing Training
- Semi-supervised GANs
- GANs for Text and Audio Generation
- StyleGAN and Style Transfer
- Adversarial Attacks and Defense

Advanced GAN Architectures

- Overview of Advanced GAN Variants
- Self-Attention GANs (SAGANs)
- BigGAN and its Innovations
- StyleGAN2 and StyleGAN3

Training Techniques

- Advanced Loss Functions
- Spectral Normalization
- Gradient Penalty and Regularization
- Techniques for Stabilizing GAN Training

Conditional and Multi-modal GANs

- Conditional GANs (cGANs)
- InfoGANs for Representation Learning
- Multi-modal GANs and Applications

Inpainting and Super-Resolution

- GANs for Image Inpainting
- Super-Resolution GANs (SRGANs)
- Face Restoration and Enhancement

Adversarial Training and Robustness

- Adversarial Attacks on GANs
- Defending Against Adversarial Examples
- Robustness and Security in GANs

Unsupervised and Semi-supervised Learning

- Unsupervised Representation Learning
- Semi-supervised Learning with GANs
- Applications in Anomaly Detection

GANs for Sequence Data

- Sequence Generation with GANs
- Text and Audio GANs
- Recurrent GAN Architectures