Seminar Report on Generative Adversarial Networks (GANs)

1. Introduction

Generative Adversarial Networks (GANs) represent a revolutionary development in the field of artificial intelligence, particularly in the realm of generative modeling. Introduced by Ian Goodfellow and his colleagues in 2014, GANs have since garnered immense attention and found applications in various domains ranging from image generation to drug discovery.

2. History

2.1. Early Developments in Generative Modeling

2.2. Emergence of GANs

3. Understanding GANs

3.1. Basic Architecture

3.2. Training Process

3.3. Types of GANs

4. Applications of GANs

4.1. Image Generation

4.2. Style Transfer

4.3. Data Augmentation

4.4. Super-Resolution Imaging

4.5. Drug Discovery

5. Advantages of GANs

5.1. High-Quality Data Generation

5.2. Versatility

5.3. Potential for Creative Applications

6. Challenges and Limitations

6.1. Mode Collapse

6.2. Training Instability

6.3. Ethical Concerns

7. Future Directions

7.1. Improving Stability and Robustness

7.2. Novel Applications

7.3. Integration with Other AI Techniques

8. Conclusion

Generative Adversarial Networks represent a groundbreaking advancement in AI, offering unparalleled capabilities in generating high-quality synthetic data. While facing challenges, the potential of GANs to revolutionize various industries is undeniable.

9. References

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