# 11)Title: ForkGAN: Seeing into the Rainy Night

**Review:** The research paper "ForkGAN: Seeing into the Rainy Night" proposes a novel image-to-image translation framework for converting pictures taken in wet situations into their comparable pictures taken in dry settings. The difficult task of eliminating rain from photographs is covered in the study. This work is crucial for a number of computer vision applications, including surveillance, autonomous driving, and image analysis.A generator network and a discriminator network are the two primary parts of the conditional generative adversarial network (ForkGAN) that the authors propose. While the discriminator network seeks to discriminate between the generated rain-free images, the generator network learns to map rainy images to rain-free images. The outcomes show how ForkGAN may improve rainy photos and make them better suited for various computer vision applications.

# 12)Title: Historical and Modern Image-to-Image Translation with Generative Adversarial Networks

# Review: The study "Historical and Modern Image-to-Image Translation with Generative Adversarial Networks" investigates the use of GANs for image-to-image translation challenges with an emphasis on both historical and contemporary image translation.The paper offers a thorough analysis of the methods and literature currently available for GAN-based image-to-image translation. It covers the drawbacks and shortcomings of conventional picture translation techniques and emphasises the potential of GANs to address these drawbacks. The authors offer a comprehensive examination of several GAN architectures and loss functions that have been suggested for use in picture translation applications.The paper's comprehensive experimentation and evaluation are one of its strengths.

13)Title: Automated Extraction of Cerebral Infarction Region in Head MR Image Using Pseudo Cerebral Infarction Image by CycleGAN**.**

**Review:** A generative adversarial network called CycleGAN is used in the study titled "Automated Extraction of Cerebral Infarction Region in Head MR Image Using Pseudo Cerebral Infarction Image by CycleGAN" to automate the extraction of cerebral infarction regions from head MRI images. To increase the precision of infarction region segmentation, the authors suggest a novel method that makes use of artificially created images of pseudo cerebral infarction produced using CycleGAN.The detection of cerebral infarction zones with accuracy and efficiency is a critical component of diagnosing and treating stroke patients, hence the research addresses a significant issue in medical imaging analysis. The scientists want to improve segmentation performance by using CycleGAN to create fake images that closely mimic genuine cerebral infarction images.

14)Title: ColorAI – Automatic Image Colorization using CycleGAN.

**Review:**The fascinating research paper "ColorAI - Automatic Image Colorization using CycleGAN" examines the use of CycleGAN in the context of automatic picture colorization. The study addresses the problem of realistic and aesthetically acceptable grayscale to colour image conversion. The authors suggest a unique method for automating the colorization process that makes use of generative adversarial networks and the cycle-consistency loss.The paper's clear and succinct exposition of the approach is one of its significant strengths. The CycleGAN framework and its application to the colorization job are thoroughly explained by the authors. They include clear explanations of the network architecture, loss functions, and training process for readers who are already familiar with deep learning.

15)Title: Fake-image detection with Robust Hashing

Review: The critical issue of detecting false photos using robust hashing algorithms is covered in the research paper titled "Fake-image detection with Robust Hashing". The authors suggest a unique method for detecting altered or faked photographs that makes use of the strength of powerful hashing algorithms.The study starts out by giving a thorough summary of the escalating issue of phoney photographs in the current digital world. It draws attention to the many methods and resources employed by bad actors to produce and disseminate false pictures. The authors stress the necessity for accurate and reliable techniques to discern between real and altered photos.The primary contribution of this research is the suggestion of a reliable hashing method created especially for the identification of false images. The hashing algorithm is explained in great length by the authors.

# 16)Title: A WAVENET(CYCLEGAN(CQT(AUDIO))) PIPELINE FOR MUSICAL TIMBRE TRANSFER.

# Review: In the research paper "TIMBRETRON: A WAVENET(CYCLEGAN(CQT(AUDIO))) PIPELINE FOR MUSICAL TIMBRE TRANSFER", an original method for musical timbre transfer is presented utilising a pipeline that combines WaveNet, CycleGAN, and Constant-Q Transform (CQT) methods.The paper presents the idea of timbre transfer, which describes the process of changing a musical sound's timbre or tonal quality while maintaining other elements like pitch and rhythm. To ensure excellent timbre transmission, the suggested pipeline makes use of deep learning models.The necessary audio features are initially extracted from the input musical signal by the authors using the Constant-Q Transform (CQT). Both the spectral content and timbral aspects of the audio are captured by these features. They then use the CycleGAN model to figure out how the CQT features map to one another.

# 17)Title: High-Quality Facial Photo-Sketch Synthesis Using Multi-Adversarial Networks

# Review: The research paper "High-Quality Facial Photo-Sketch Synthesis Using Multi-Adversarial Networks" suggests a technique for creating high-quality facial sketches from related images. In order to preserve the identity of the face in the generated sketches and capture the fine features, the study offers a unique framework based on multi-adversarial networks.The suggested method uses the strength of generative adversarial networks (GANs) to discover the mapping between doodles and photos. To assure the creation of realism and aesthetically pleasing sketches, it integrates numerous adversarial learning stages, including global-level adversarial training and local-level adversarial training.This paper's strengths come from its successful application of GANs to the difficult job of photo-sketch synthesis. The dual global structure is better captured by the multi-adversarial training technique. & regional specifics

# 18)Title: A Steganography Algorithm Based on CycleGAN for Covert Communication in the Internet of Things

**Review:** In the context of the Internet of Things (IoT), the study "A Steganography Algorithm Based on CycleGAN for Covert Communication in the Internet of Things" suggests a novel strategy for information concealment using CycleGAN. By utilising the strength of generative adversarial networks, the authors meet the requirement for secure communication in IoT applications.The notion of steganography and its uses in IoT are presented in detail in this study. The authors stress the benefits of employing CycleGAN for covert communication while outlining the drawbacks of conventional steganography methods. They go into great depth about the proposed algorithm's architecture and operation, with step-by-step explanations and pertinent equations.The authors' experimental analysis indicates the efficiency of their strategy for concealment.

19)Title: Geometry-Consistent Generative Adversarial Networks for One-Sided Unsupervised Domain Mapping.

**Review:** The research paper "Geometry-Consistent Generative Adversarial Networks for One-Sided Unsupervised Domain Mapping" suggests a novel method for unsupervised domain mapping using GANs with an emphasis on preserving geometric consistency between source and target domains. Without paired data for supervision, the research addresses the problem of picture mapping from one domain to another.The authors present a two-stage framework made up of a discriminator network and a geometry-consistent generator. While maintaining geometric features like shapes, edges, and structures, the generator seeks to learn the mapping across domains. To help the generator work better, the discriminator is trained to differentiate between genuine and created images.The experiments done for the paper show that the suggested strategy works well.

20)Title: Adaptive Weighted Multi-Discriminator CycleGAN for Underwater Image Enhancement

**Review:** The article "Adaptive Weighted Multi-Discriminator CycleGAN for Underwater Image Enhancement" describes a novel method for improving the calibre of underwater photographs using an adaptive weighted multi-discriminator CycleGAN. The authors suggest a methodology that effectively addresses the issues of underwater image degradation and improves visual quality by utilising CycleGAN and multiple discriminators with adjustable weights.Overall, the method presented in the study "Adaptive Weighted Multi-Discriminator CycleGAN for Underwater Image Enhancement" offers hope for overcoming the difficulties posed by underwater image degradation. With more investigation and enhancement, the technology has the potential to considerably advance underwater imaging applications, spanning from scientific study to underwater photography and videography. The results show appreciable increases in image quality.

# Reference[11]: Z. Zheng, Y. Wu, X. Han, and J. Shi, "ForkGAN: Seeing into the Rainy Night," in Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition (CVPR)

# Reference[12]: Jun-Yan Zhu, Taesung Park, Phillip Isola, and Alexei A. Efros.Title: "Unpaired Image-to-Image Translation Using Cycle-Consistent Adversarial Networks".Conference/Journal: Proceedings of the IEEE International Conference on Computer Vision (ICCV).

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Reference[15]: Tanaka, M., & Kiya, H. (2021). "Fake-image detection with Robust Hashing." arXiv preprint arXiv:2102.01313v1 [cs.MM], 2 Feb 2021.

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