# Application Matrix of Families of Generative Models for Computer Vision

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Table 1: Application Matrix of Families of Generative Models for Computer Vision

| | Applications | | | | | | |
|---|---|---|---|---|---|---|---|
| | Data Augmentation | Super Resolution | Inpainting | Denoising | Style Transfer | Object Transfiguration | Image Colorization |
| VAEs | 🟢 | 🔴 | 🔴 | 🔴 | 🔴 | 🔴 | 🔴 |
| GANs | 🟢 | 🔴 | 🔴 | 🔴 | 🟢 | 🟢 | 🔴 |
| Flow-based Models | 🟢 | 🔴 | 🔴 | 🔴 | 🟡 | 🟡 | 🟡 |
| Auto-regressive Models | 🟢 | 🔴 | 🔴 | 🔴 | 🟡 | 🟡 | 🟡 |
| Hybrid Models | 🟢 | 🔴 | 🔴 | 🔴 | 🟡 | 🟡 | 🟡 |
| Diffusion Models | 🔴 | 🔴 | 🔴 | 🔴 | 🔴 | 🔴 | 🔴 |
| Other notable models | 🔴 | 🟢 | 🟡 | 🟡 | 🔴 | 🔴 | 🔴 |

- 🟢 Model fits the application
- 🔴 Model doesn't fit the application
- 🟡 Unexplored application

## Variational Autoencoders (VAEs)

- Vanilla VAE
  - **Repository Link**: GitHub Repository
  - **Paper Link**: Example Paper
  - **Owner**: Company/Group Name
  - **Explanation**: Brief description and key characteristics of the Vanilla VAE model.

## Generative Adversarial Networks (GANs)

- Vanilla GAN
  - **Repository Link**: GitHub Repository
  - **Paper Link**: Example Paper
  - **Owner**: Company/Group Name
  - **Explanation**: Brief description and key characteristics of the Vanilla GAN model.

## Flow-based Models

- RealNVP (Real-valued Non-Volume Preserving)
  - **Repository Link**: GitHub Repository
  - **Paper Link**: Example Paper
  - **Owner**: Company/Group Name
  - **Explanation**: Brief description and key characteristics of the RealNVP model.

## Auto-regressive Models

- PixelRNN
  - **Repository Link**: GitHub Repository
  - **Paper Link**: Example Paper
  - **Owner**: Company/Group Name
  - **Explanation**: Brief description and key characteristics of the PixelRNN model.

## Hybrid Models

- VQ-VAE-2 (Vector Quantized VAE)
  - **Repository Link**: GitHub Repository
  - **Paper Link**: Example Paper
  - **Owner**: Company/Group Name
  - **Explanation**: Brief description and key characteristics of the VQ-VAE-2 model.

## Diffusion Models

- Noise-Contrastive Estimation (NCE)
  - **Repository Link**: GitHub Repository
  - **Paper Link**: Example Paper
  - **Owner**: Company/Group Name
  - **Explanation**: Brief description and key characteristics of the NCE model.

## Other notable models

- Adversarial Autoencoders
  - **Repository Link**: GitHub Repository
  - **Paper Link**: Example Paper
  - **Owner**: Company/Group Name
  - **Explanation**: Brief description and key characteristics of the Adversarial Autoencoders model.