



# **CIS 678 Machine Learning**

Introduction to Neural Networks (cont.)

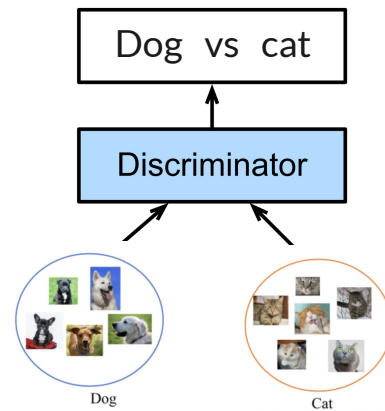


# Generative AI

Examples:

- Generative Adversarial Networks (GANs)
- Variational Autoencoders (VAEs)

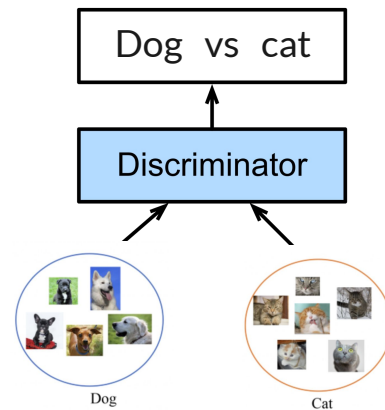
# Generative AI



# Generative AI

Examples:

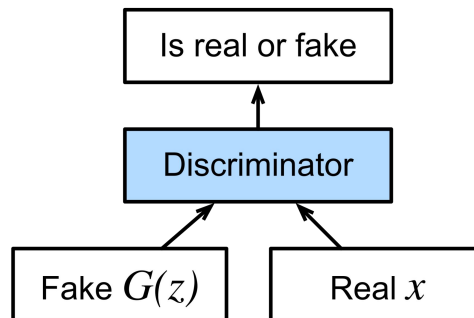
- Generative Adversarial Networks (GANs)



# Generative AI

Examples:

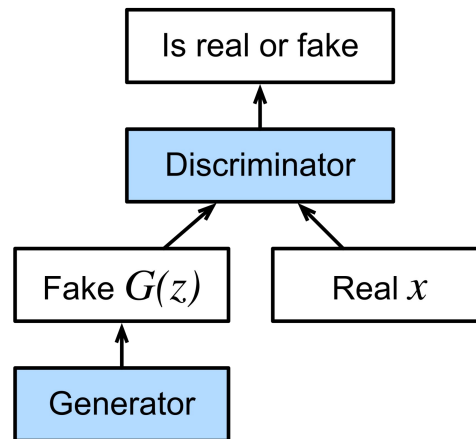
- Generative Adversarial Networks (GANs)



# Generative AI

Examples:

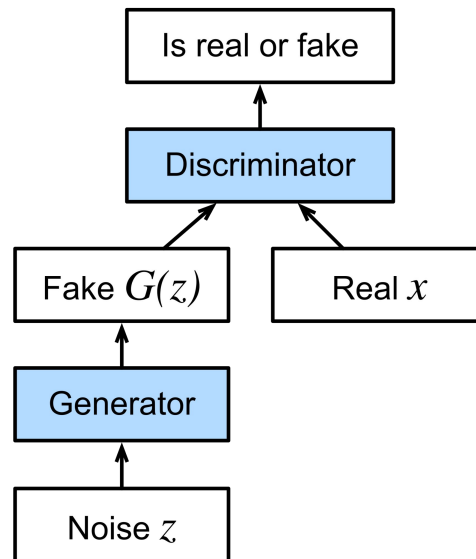
- Generative Adversarial Networks (GANs)



# Generative AI

Examples:

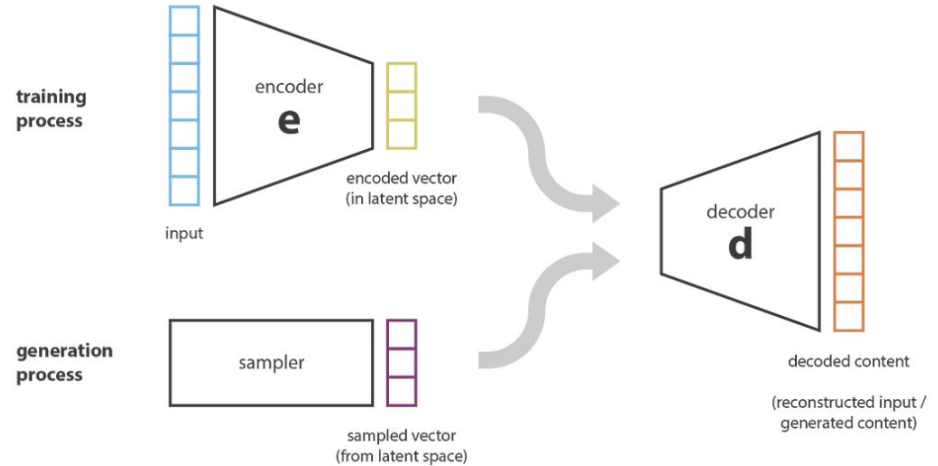
- Generative Adversarial Networks (GANs)



# Generative AI

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- **Variational Autoencoders (VAEs)**



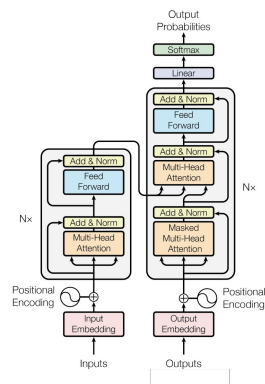


# Foundational models

- We don't train independent models explicitly (say machine translation)

BERT

Encoder



GPT

Decoder

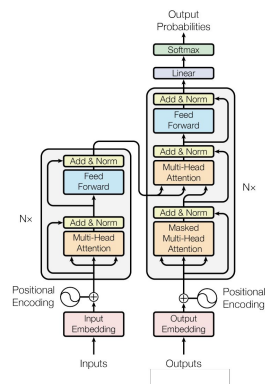
Machine translation

# Foundational models

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- Or document summarization

BERT

Encoder



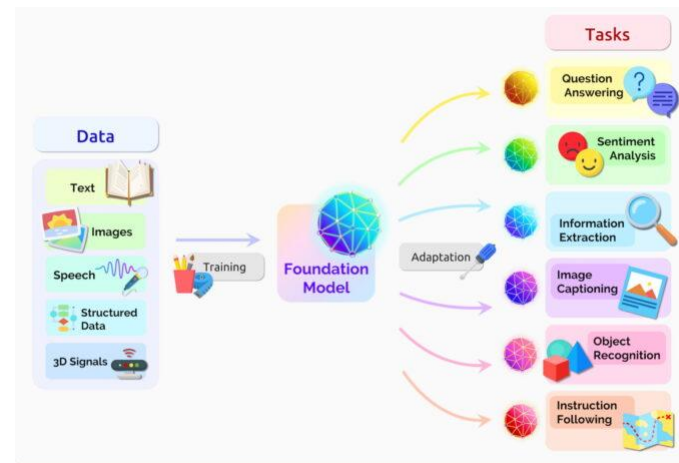
GPT

Decoder

Document summarization

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Training compute of notable machine learning models by domain, 2012–23  
Source: Epoch, 2023 | Chart: 2024 AI Index report

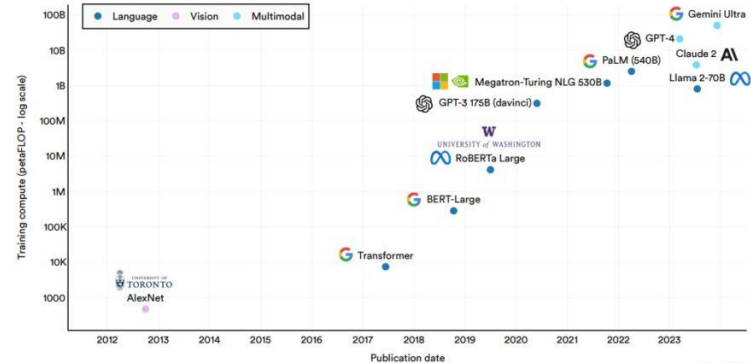


Figure 1.3.7