

Automated Poetry Generation

Ryan Moreno

Research Proposal
November 5, 2019

Wild nights - Wild nights!
Were I with thee
Wild nights should be
Our luxury!

Futile - the winds -
To a heart in port -
Come with the Compass -
Come with the Chart!

Keeling in Eden -
Ah! the Sea!
Night - ' but - Moor -
Tonight -
In thee!

This talk presents past research on poetry generation and lays out future steps

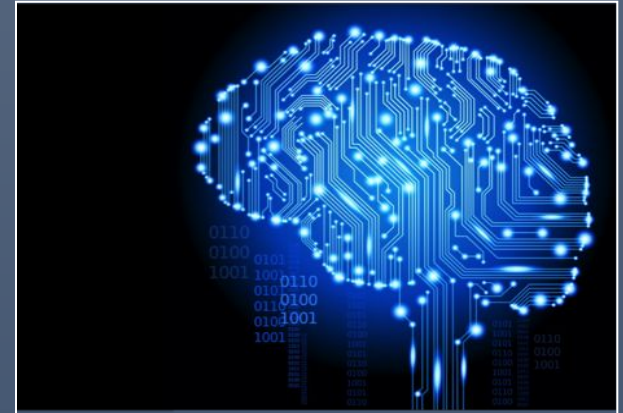
(1)	The	curfew	tolls the	knell of	parting	day
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(3)	The	curfew	tolls the	knell		
(4)	There	once was a	man from Bra-	zil		
(5)	A	metre	pattern	holds a	bunch of	beats

Poetry generation techniques

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Poetry generation techniques

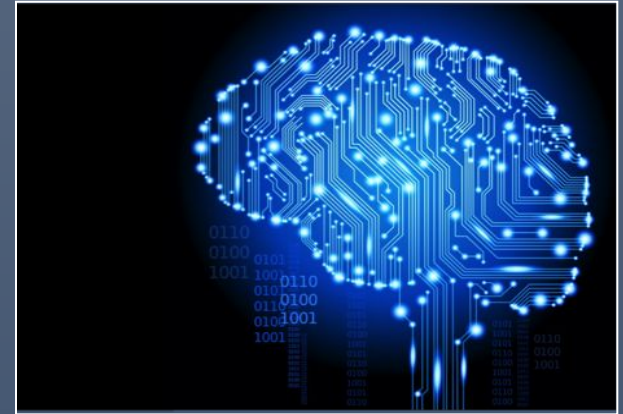


Deep learning techniques

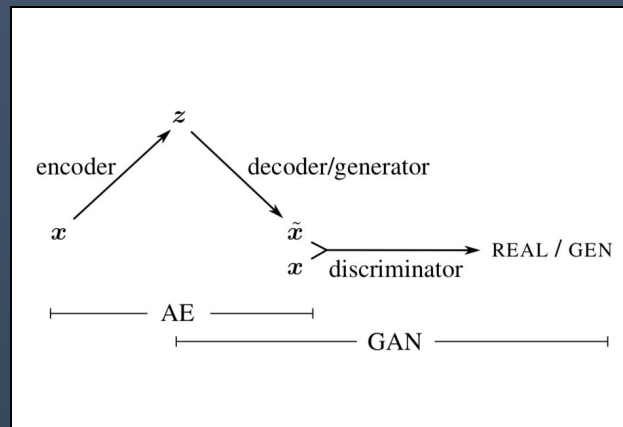
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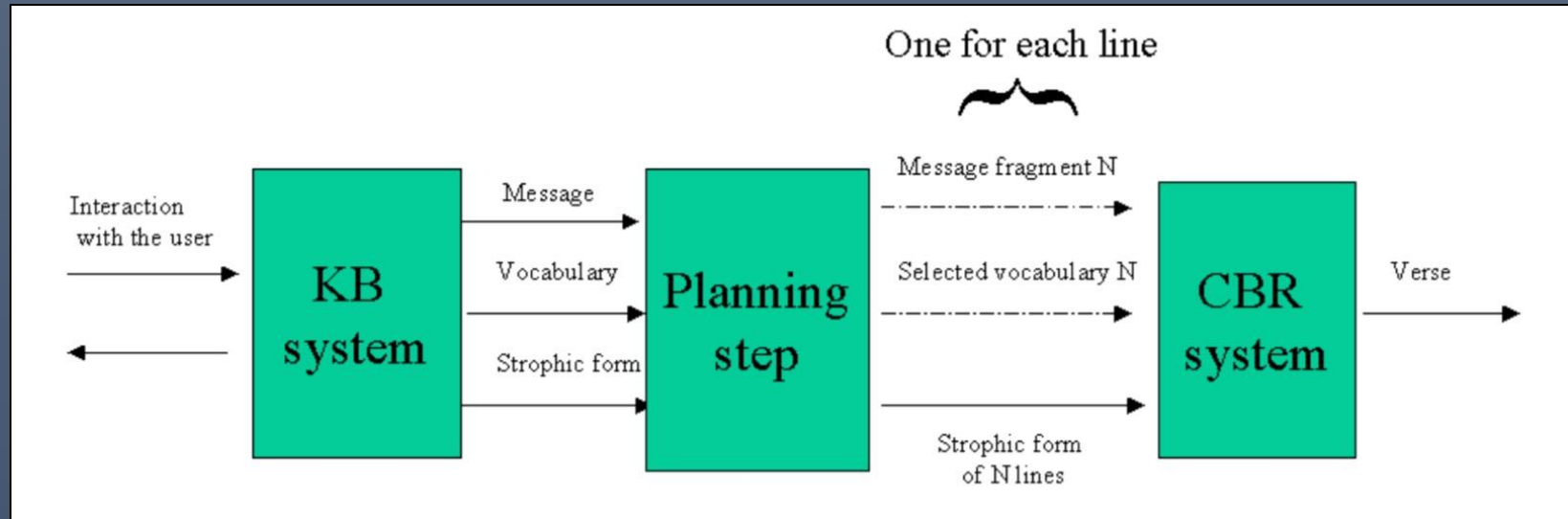


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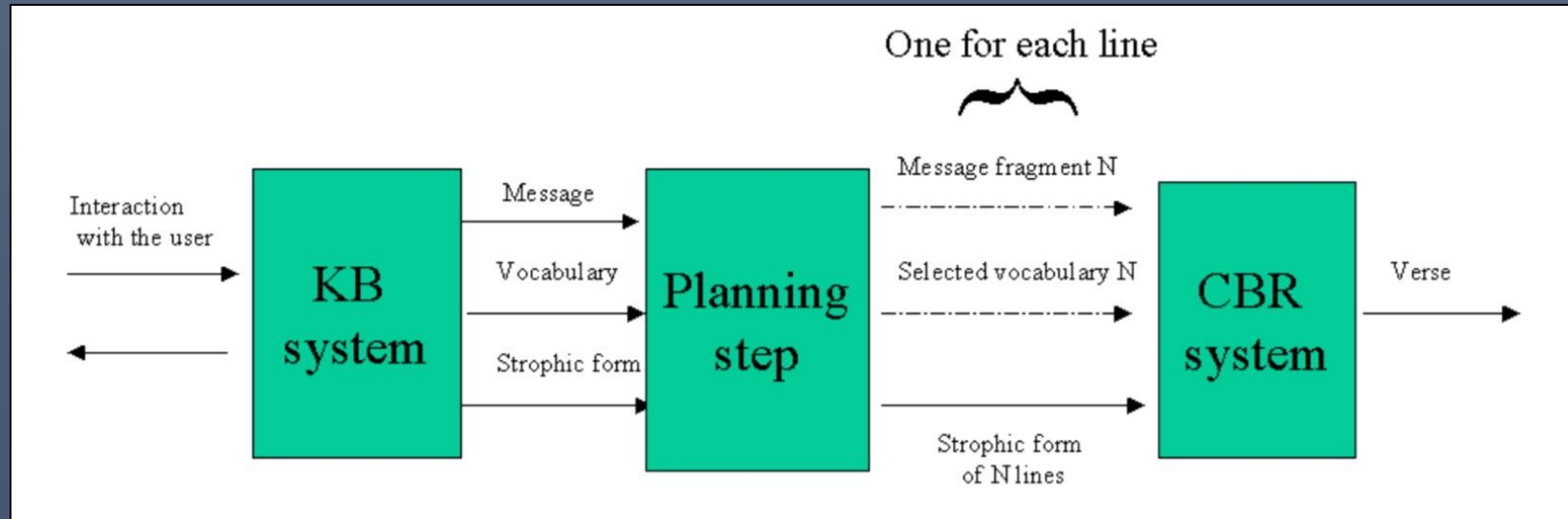


Project proposal

Rule-based approaches to poetry generation fall short: ASPERA



Rule-based approaches to poetry generation fall short: ASPERA



*Sabed que en mi perfecta edad y armado
con mis ojos abiertos me he rendido
al niño que sabéis ciego y desnudo.*



*Ladrará la verdad el viento airado
en tal corazón por una planta dulce
al arbusto que volais mudo o helado.*

*The angry wind will bark the truth
in such a heart for a sweet plant
to the bush that you are silent or frozen.*

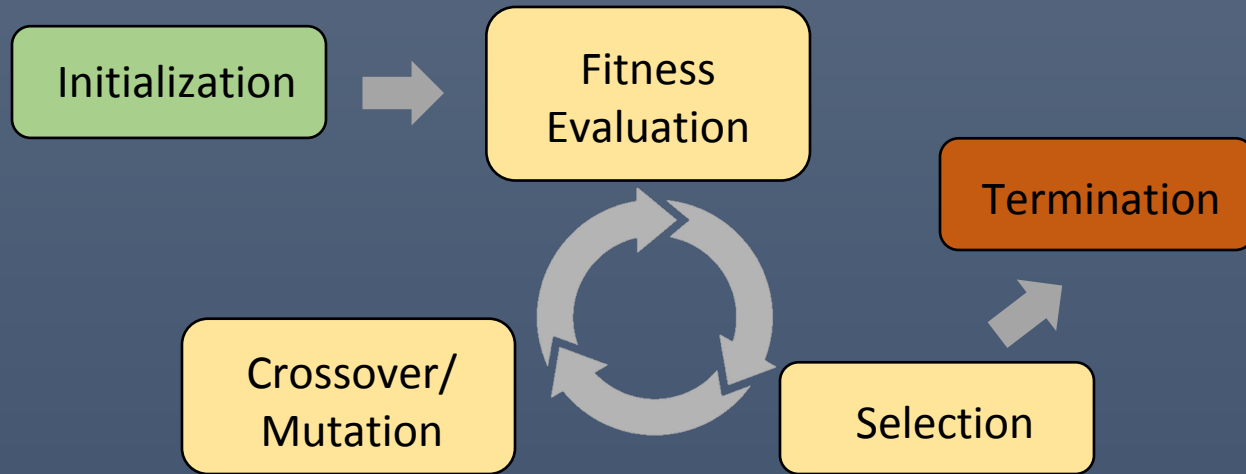
Rule-based approaches to poetry generation fall short: Racter

A crow is a bird, an eagle is a bird, a dove is a bird.
They all fly in the night and in the day. They fly when
the sky is red and when the heaven is blue. They fly through
the atmosphere. We cannot fly. We are not like a crow or
an eagle or a dove. We are not birds. But we can dream about
them. You can.

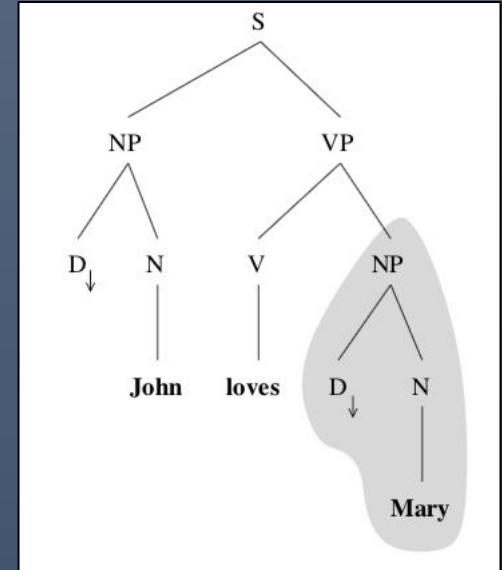
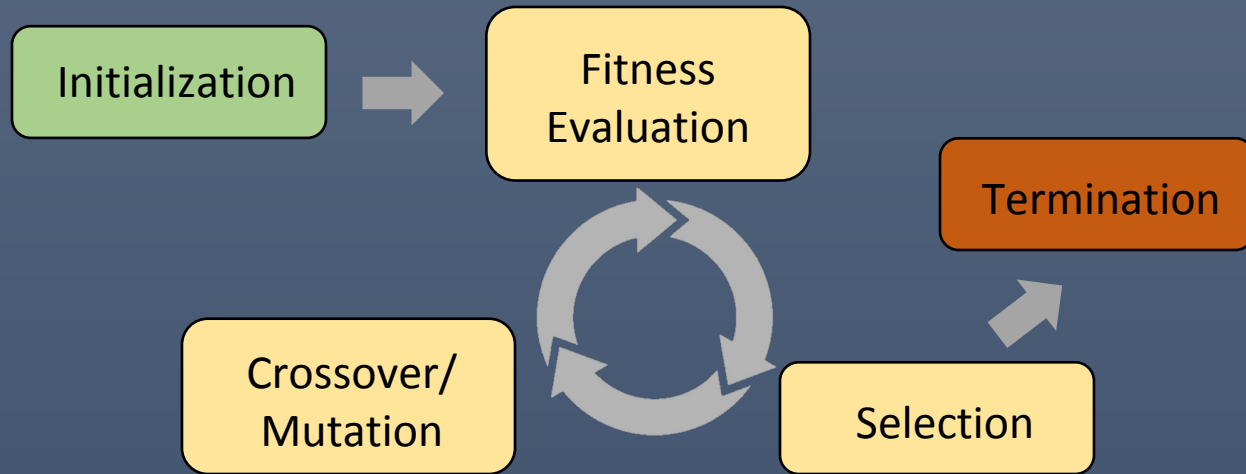


The Policeman's Beard is Half Constructed

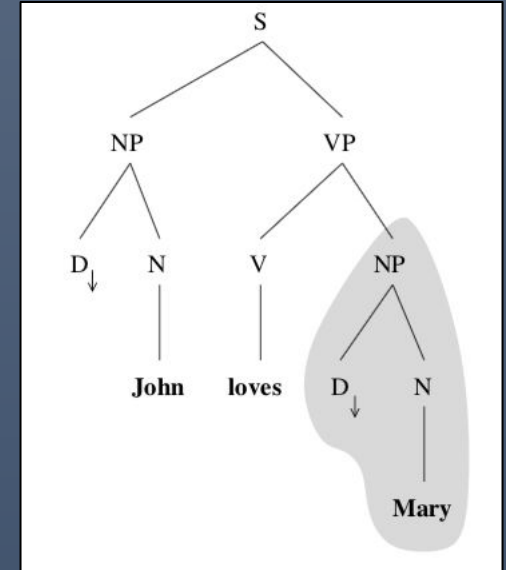
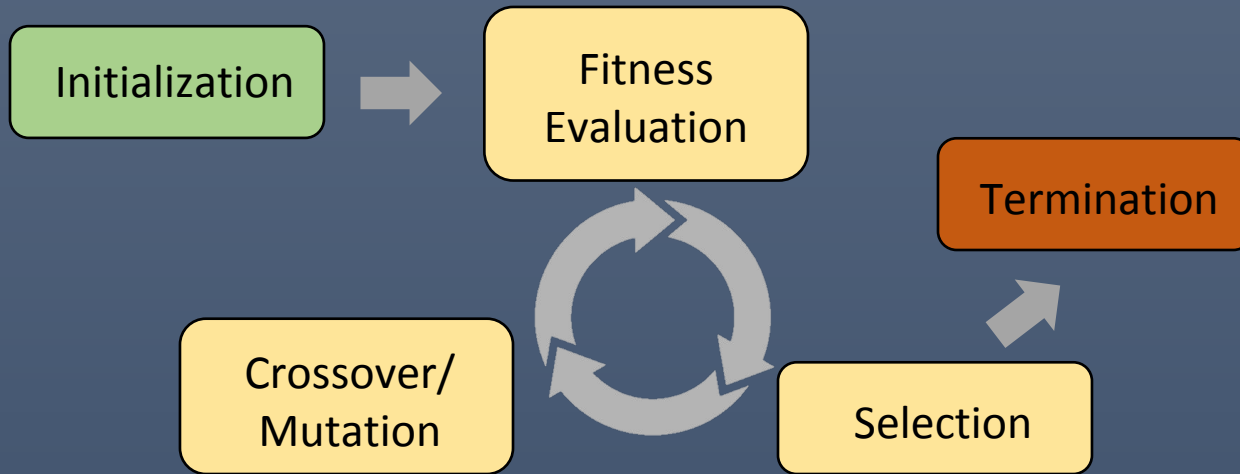
Evolutionary approaches to poetry generation fall short: McGonagall



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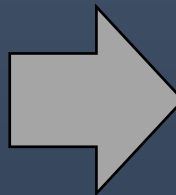


Evolutionary approaches to poetry generation fall short: McGonagall



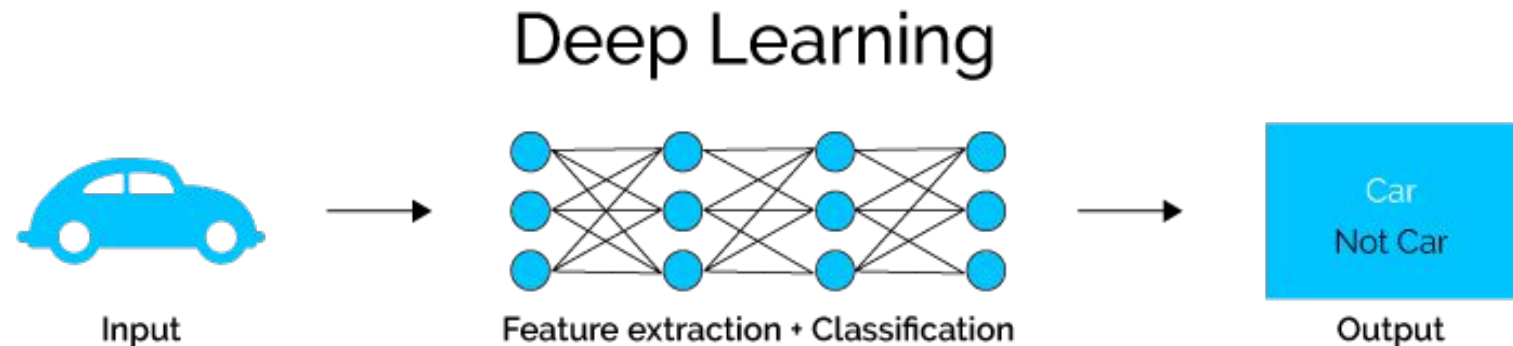
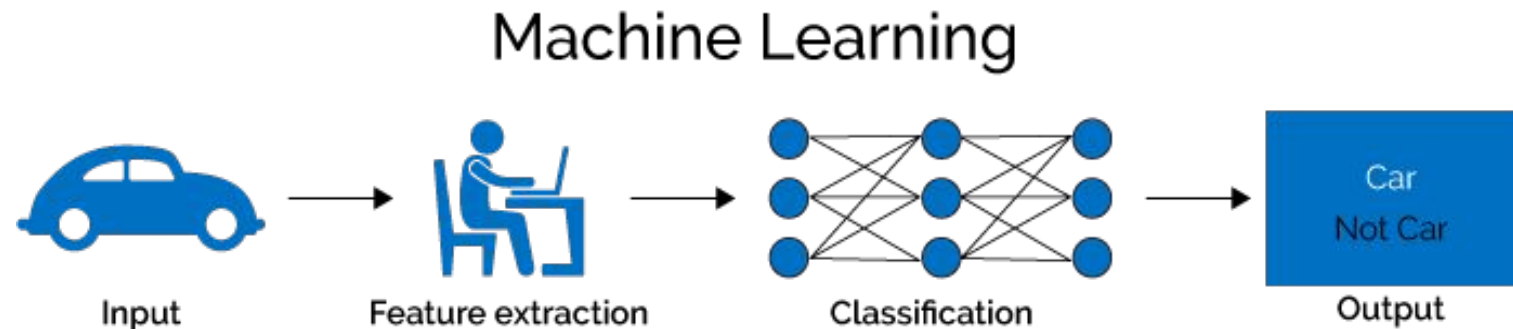
The African lion, he dwells in the waste,
he has a big head and a very small waist;
but his shoulders are stark, and his jaws they are grim,
and a good little child will not play with him.

haiku form

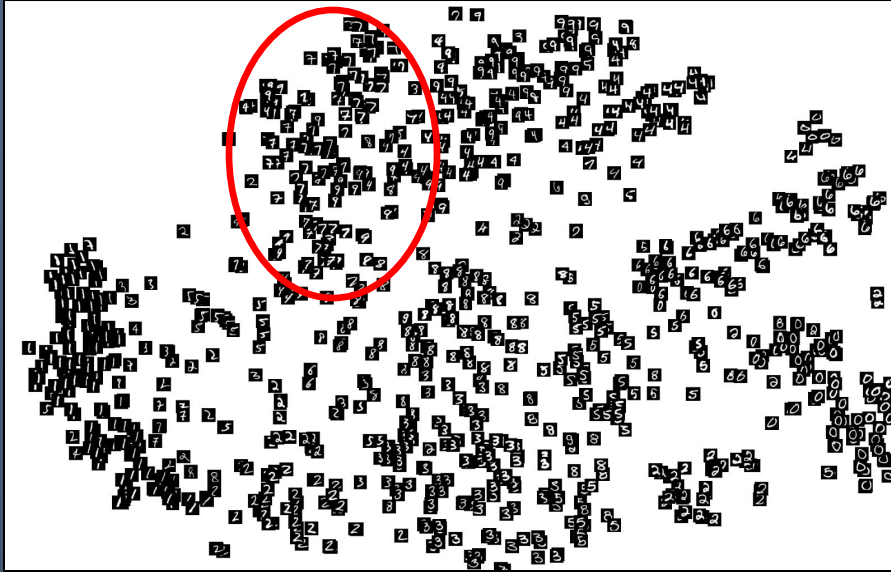


In a waste, a lion,
who has a very small waist,
dwells in a big head.

Deep learning is effective because it learns abstract concepts

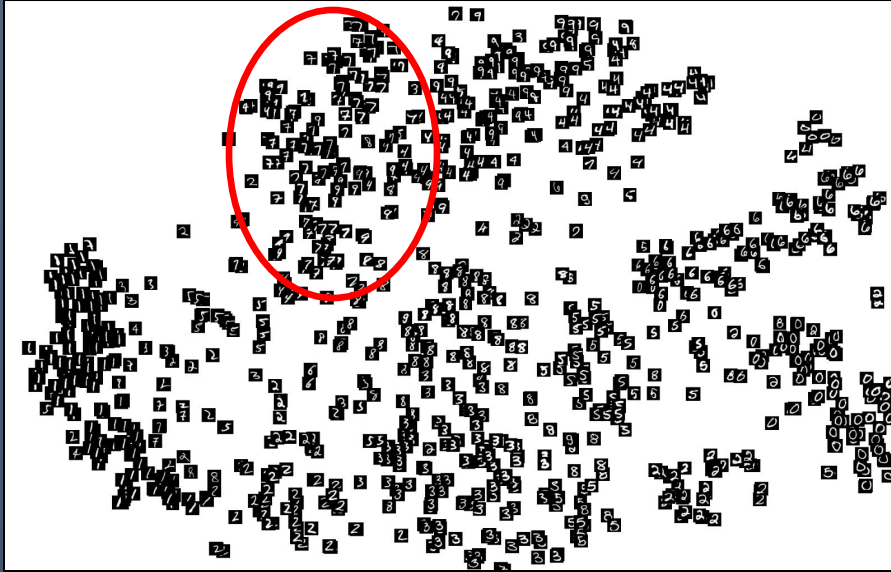


Latent space holds abstract representations of objects

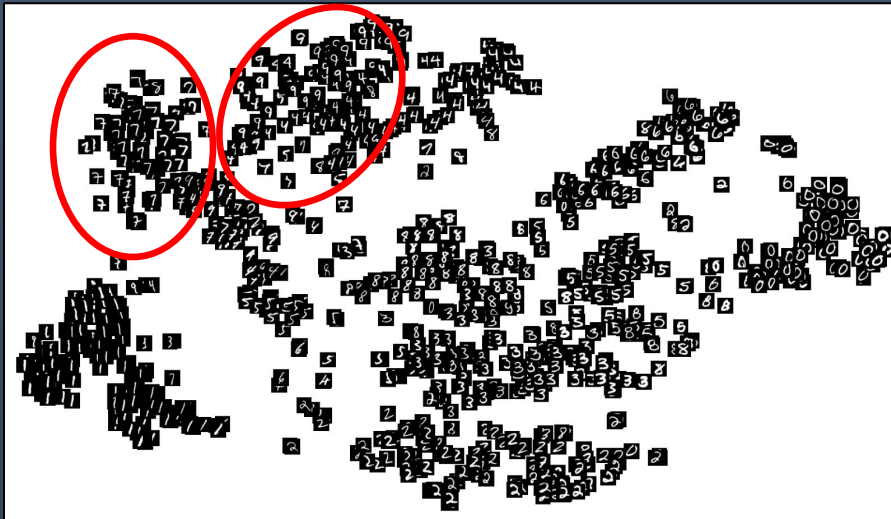


Pixel Space

Latent space holds abstract representations of objects

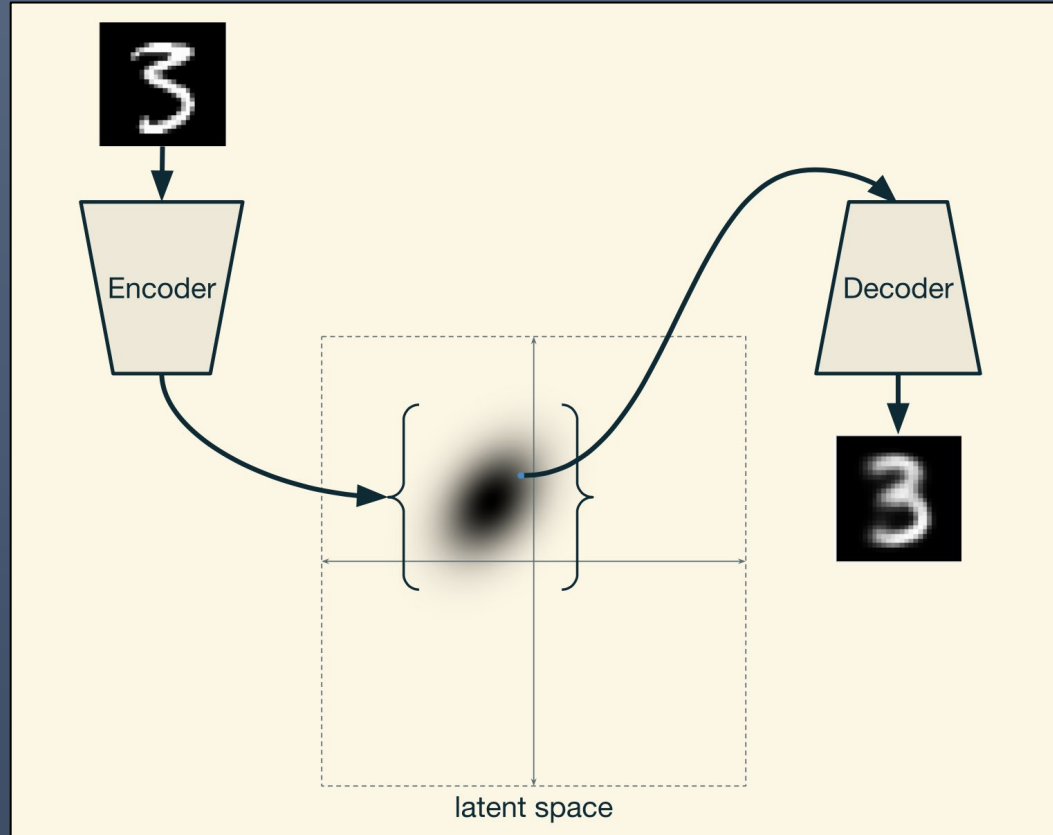


Pixel Space

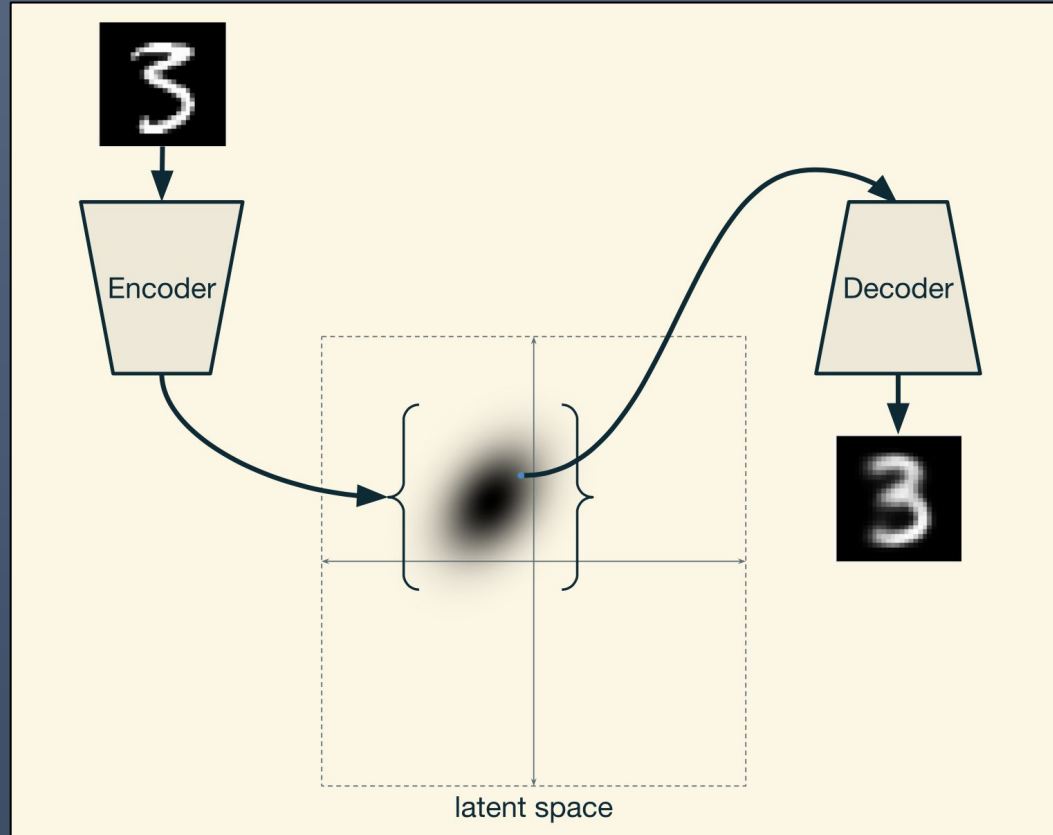


Latent Space

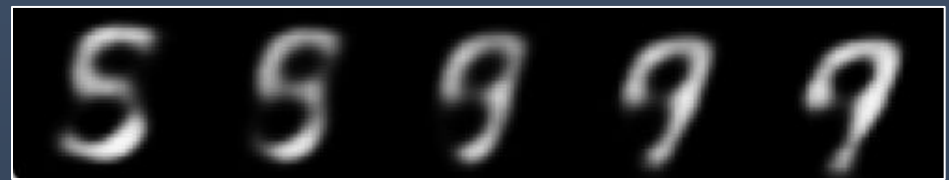
Variational autoencoders learn to encode and decode objects to and from latent space



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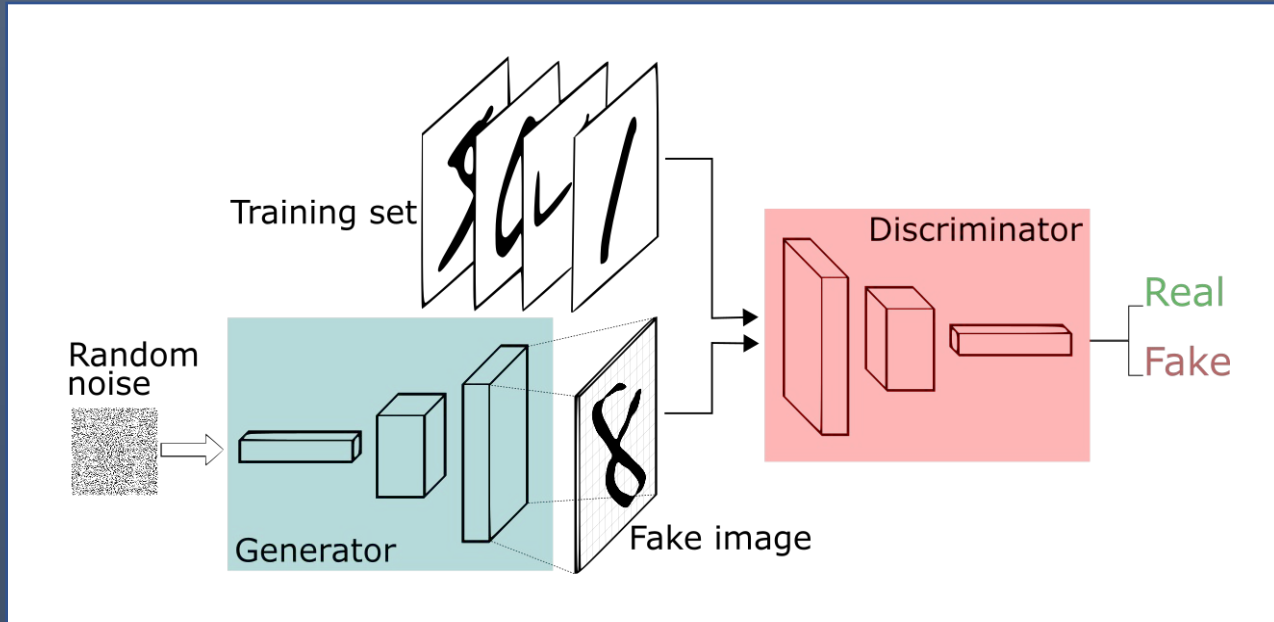


Walking through pixel space



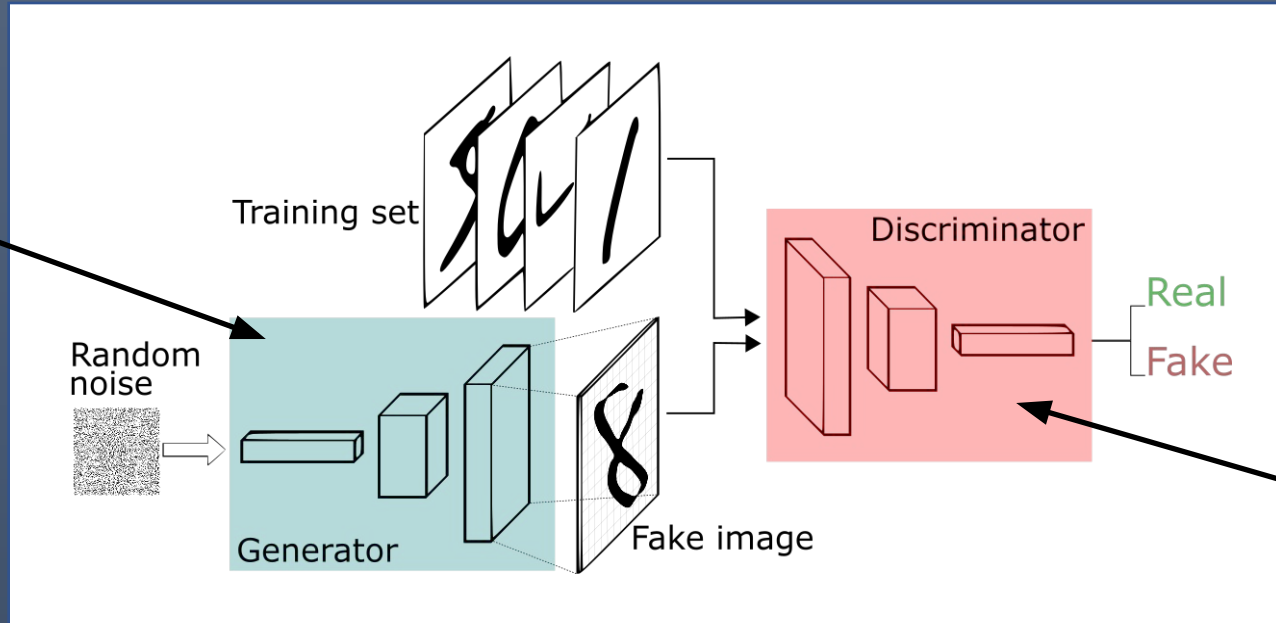
Walking through latent space

Generative adversarial networks train two neural networks against each other to improve both



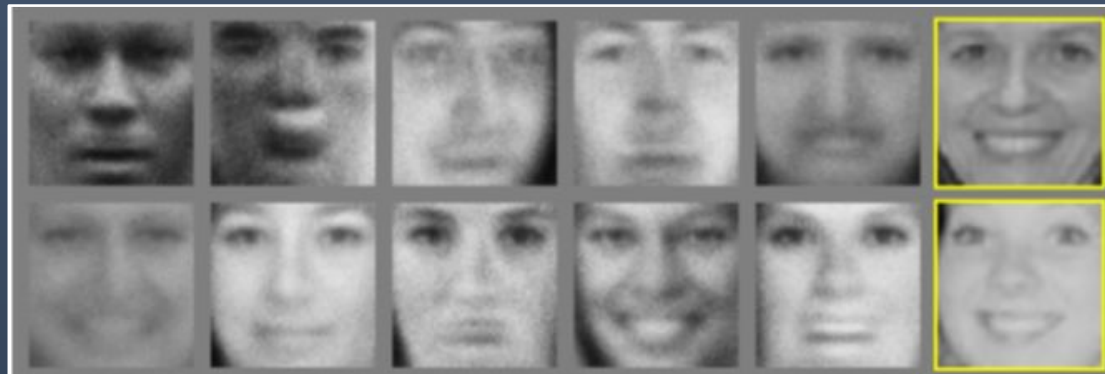
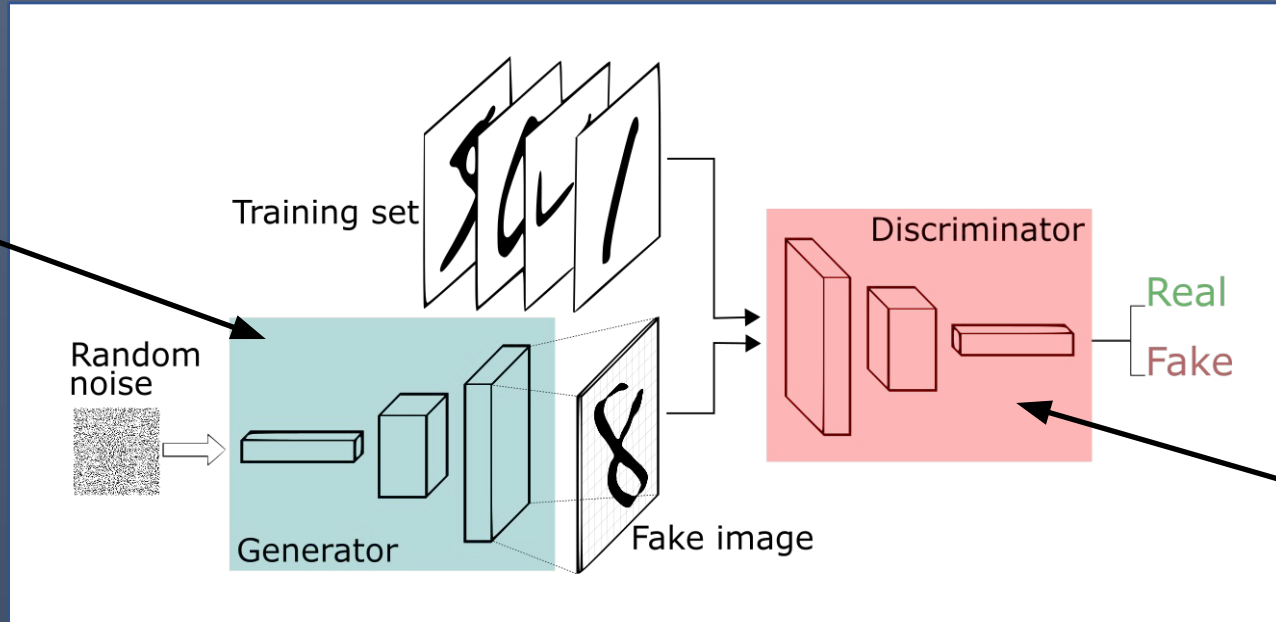
Generative adversarial networks train two neural networks against each other to improve both

counterfeiter

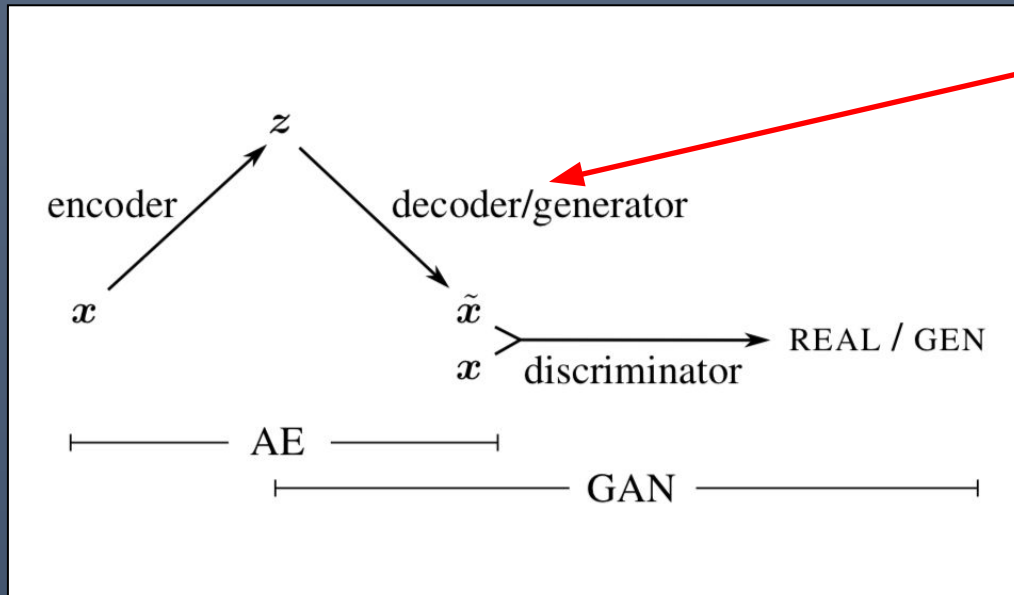


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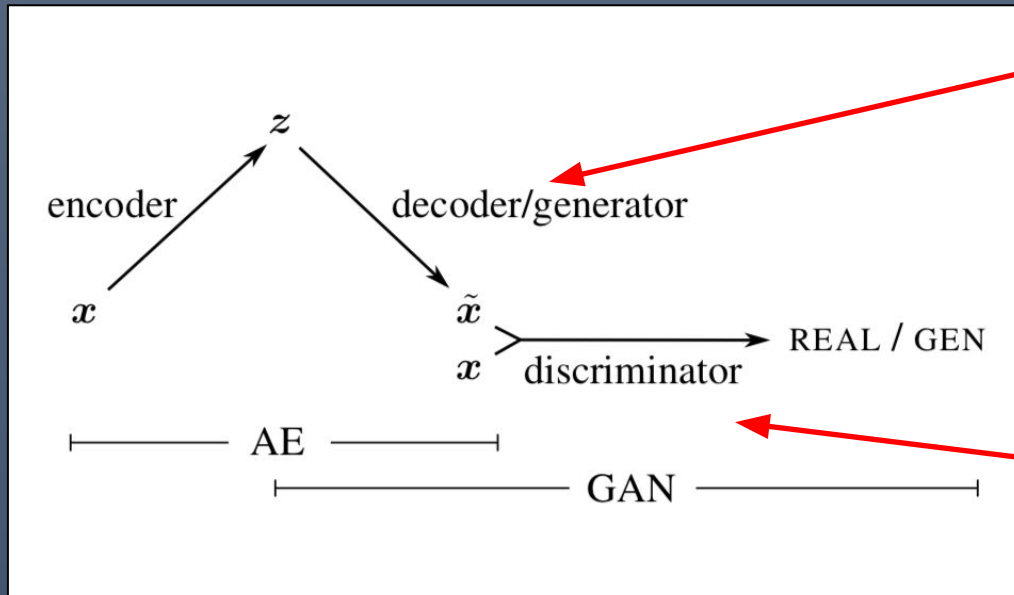


Variational autoencoders and generational adversarial networks can be combined



VAE's decoder provides GAN with a generator

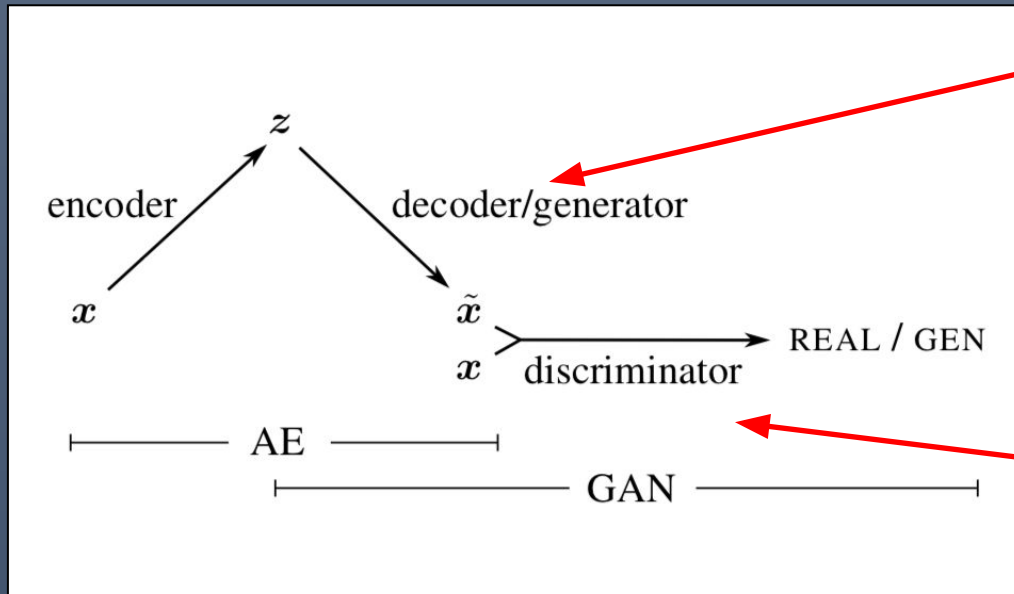
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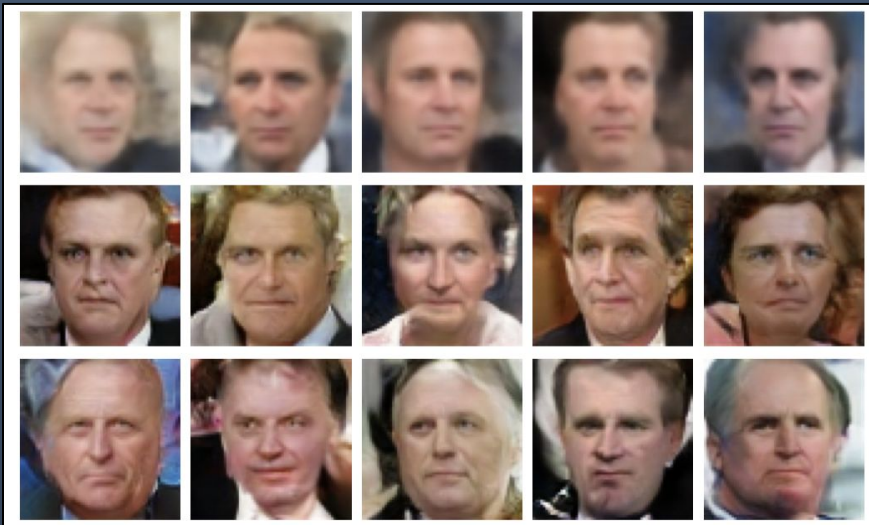
GAN's discriminator provides VAE with a similarity metric

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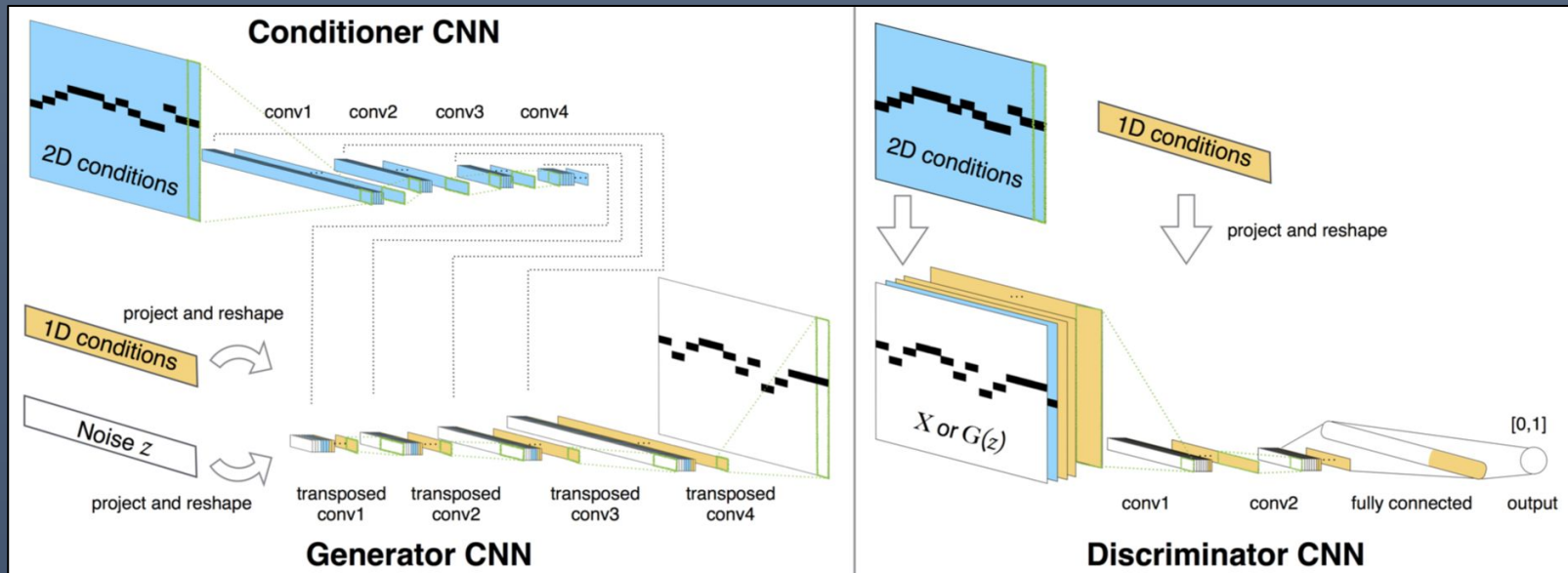


VAE

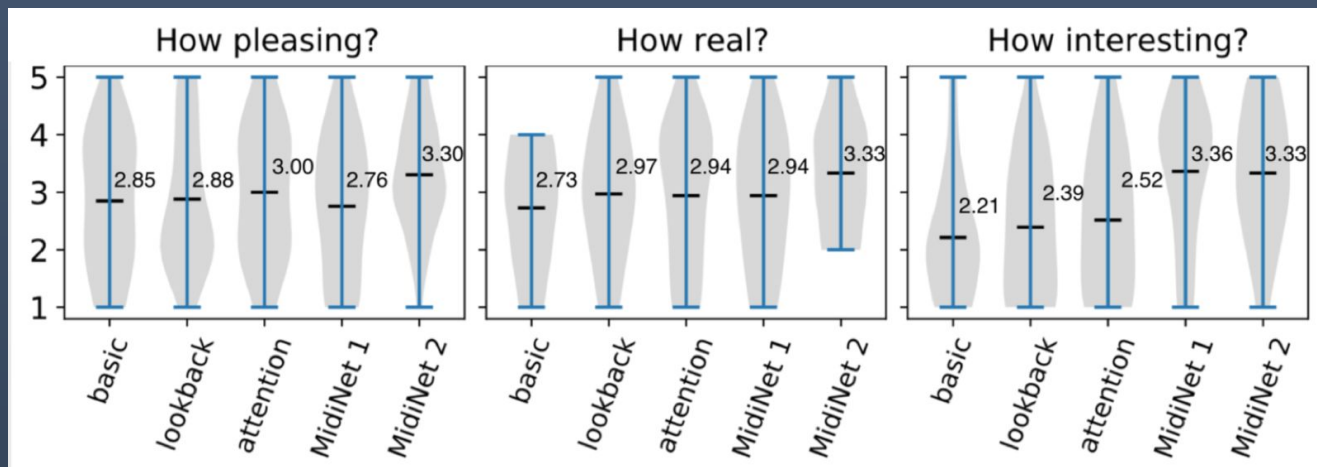
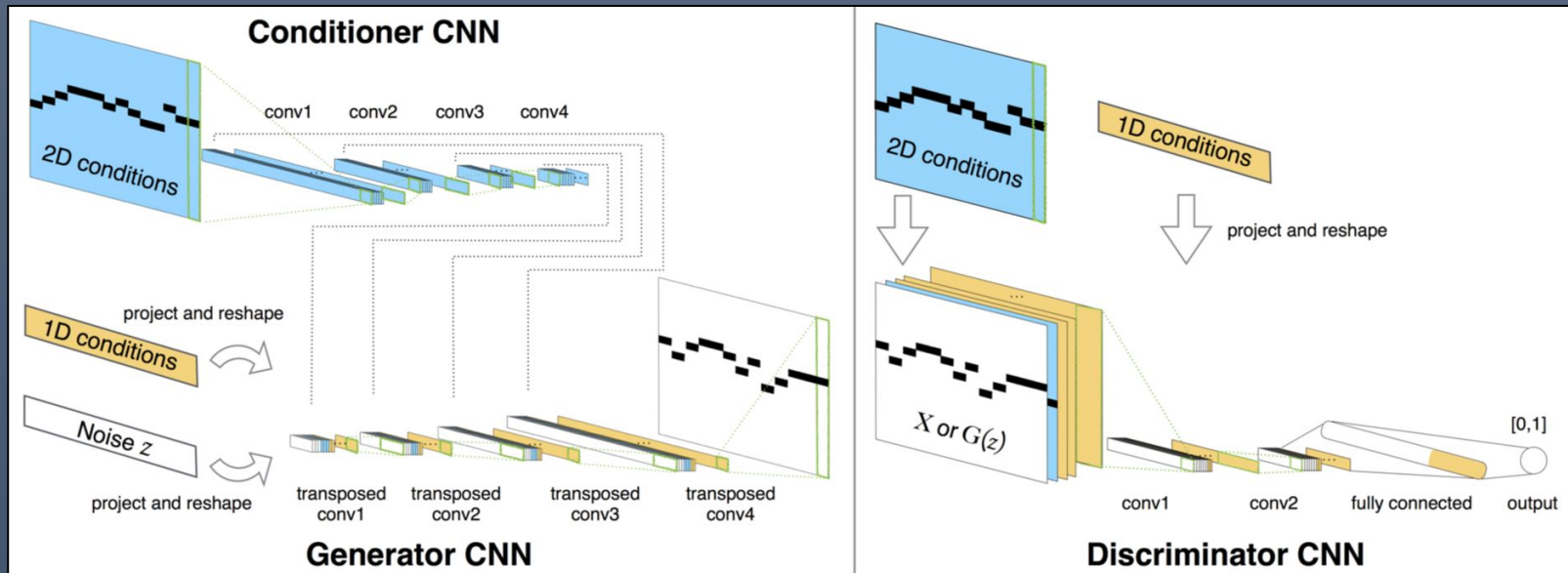
GAN

VAE/GAN

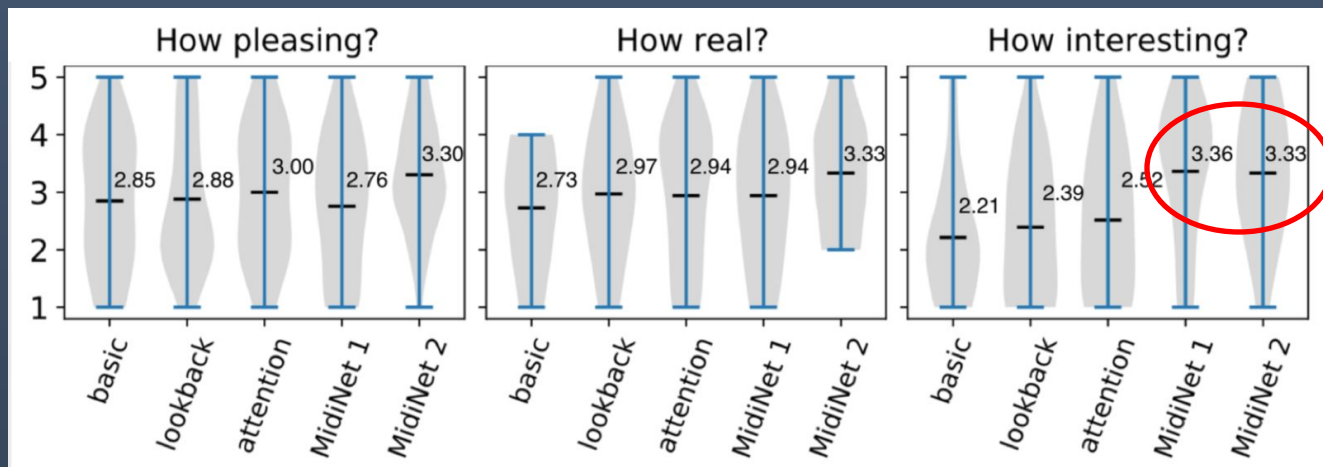
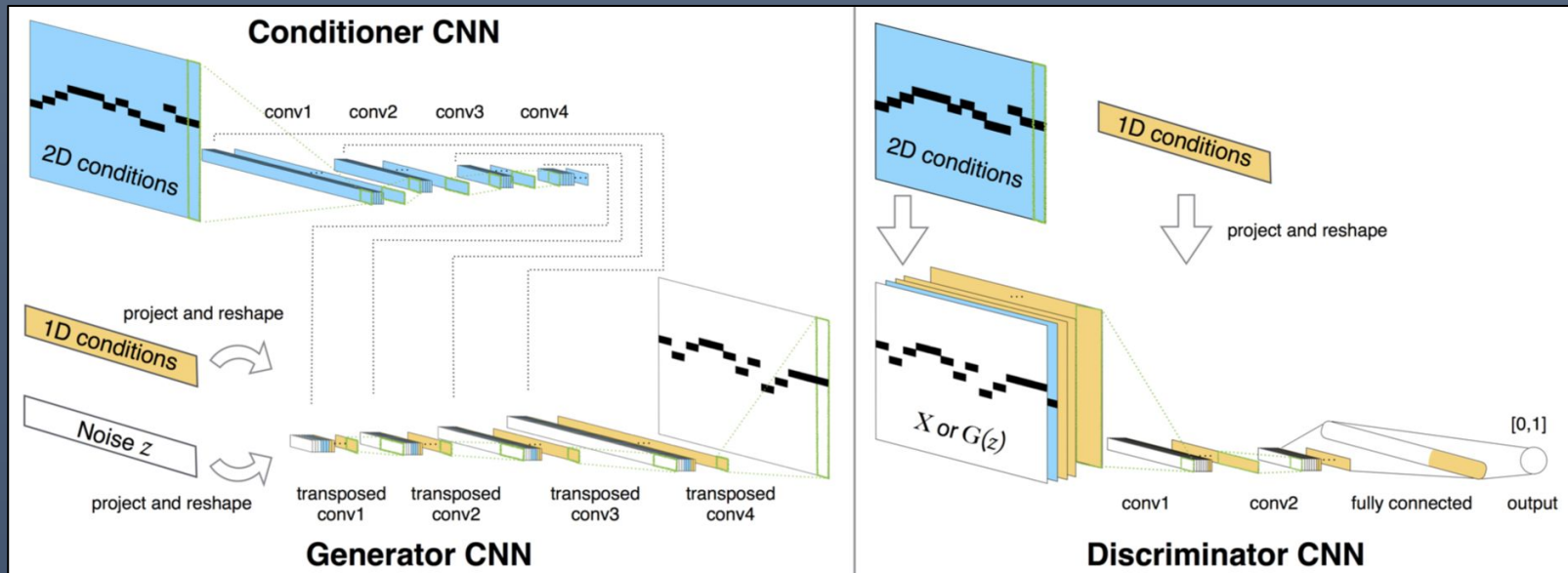
A conditioner can influence the outputs of a generative network



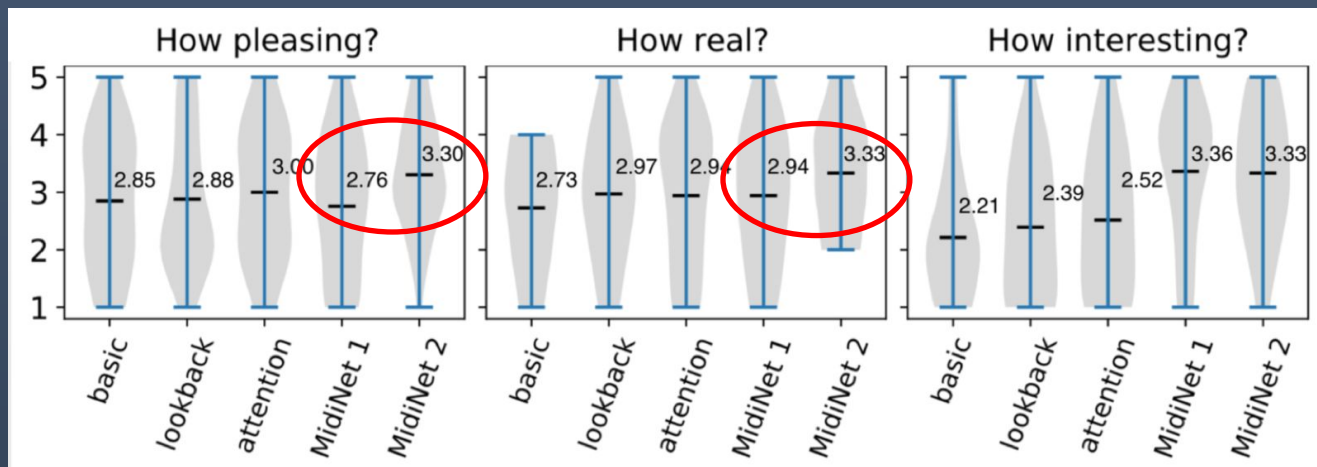
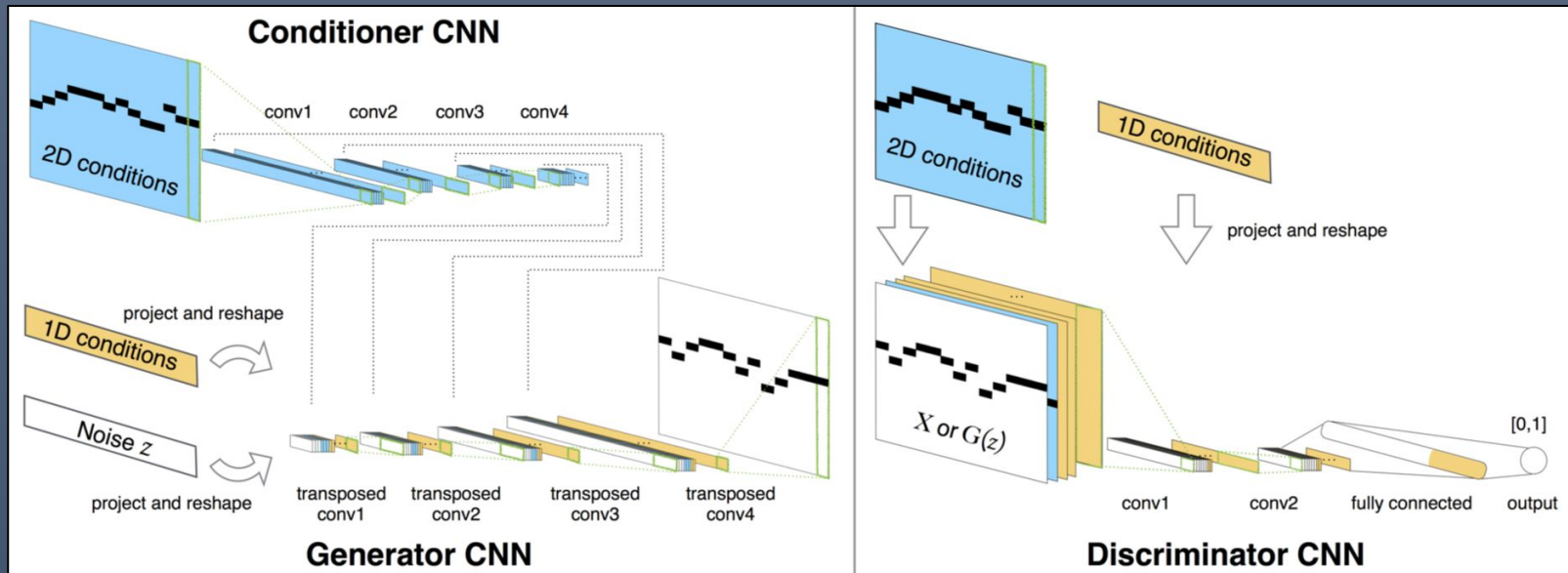
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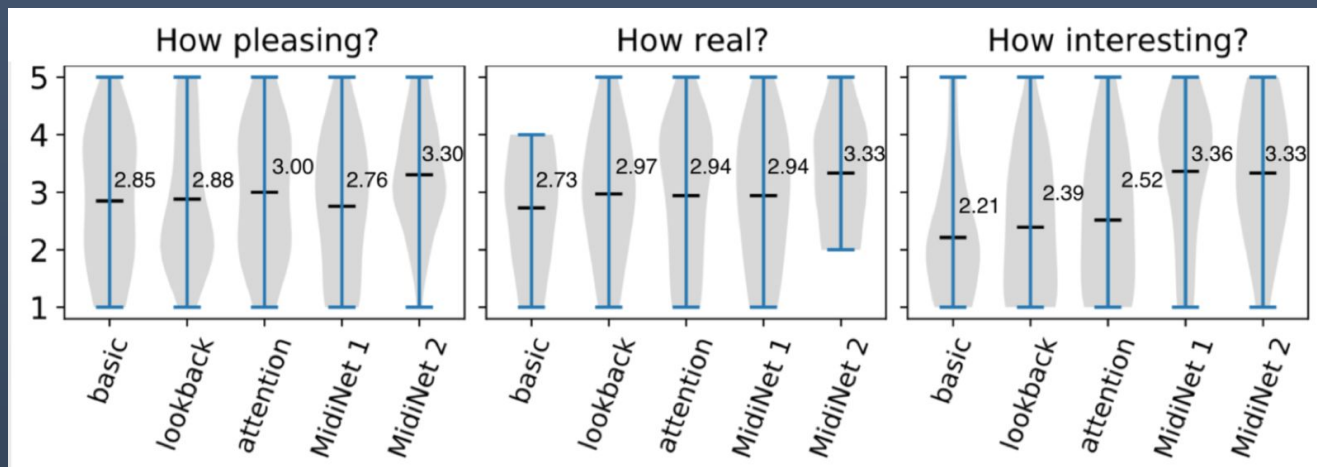
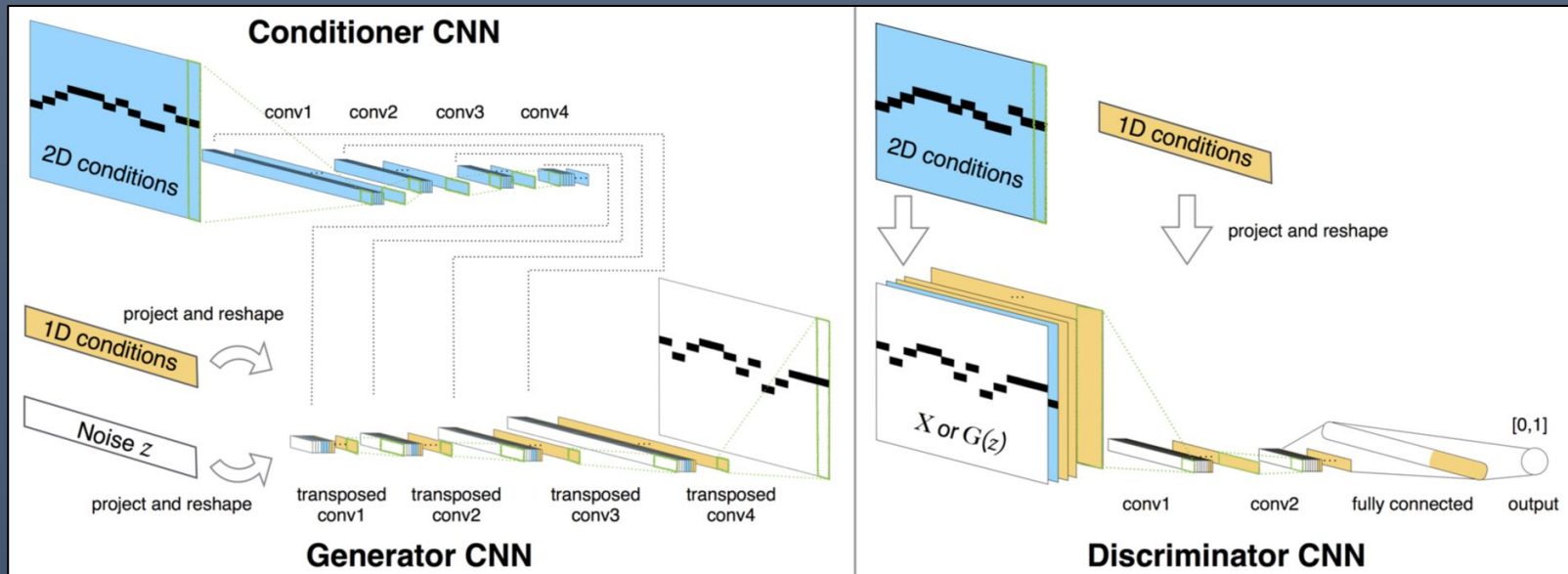
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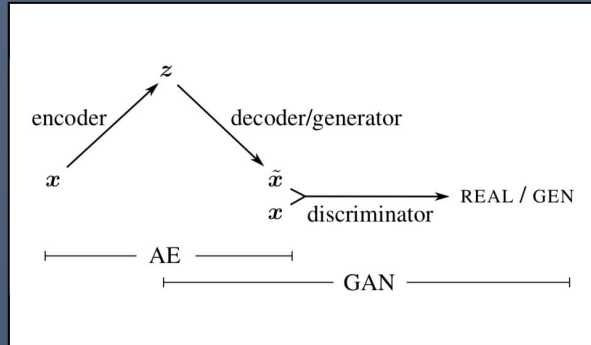
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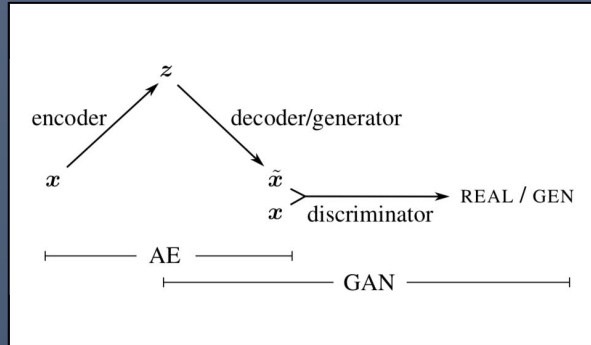


My project proposal incorporates the best of these poetry generation and deep learning techniques

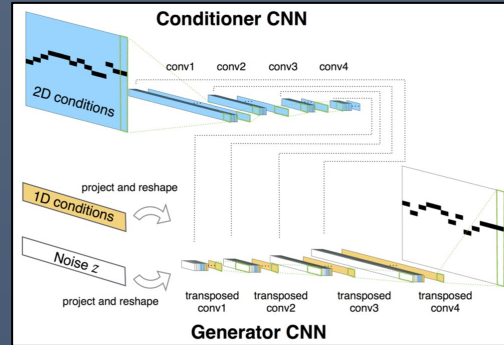


VAE/GAN framework

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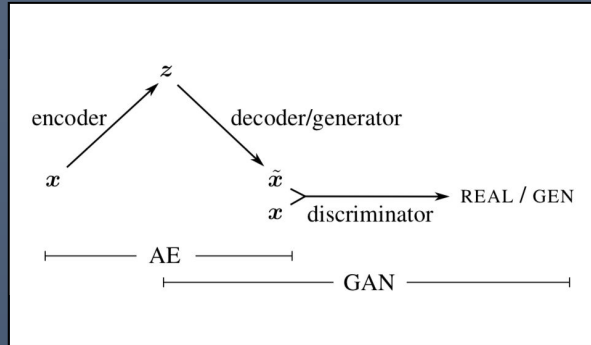


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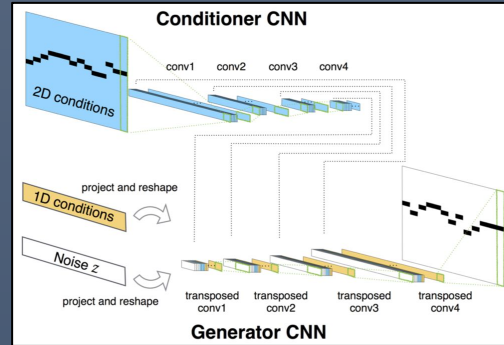


Condition stanzas with previous stanzas

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VAE/GAN framework

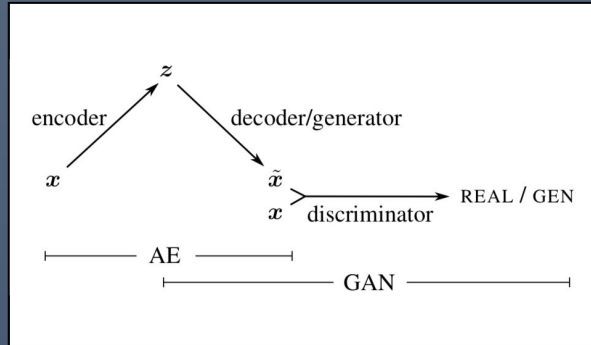


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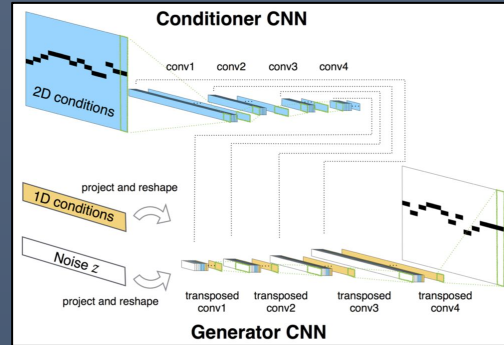


Hardcode grammar in generator

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VAE/GAN framework



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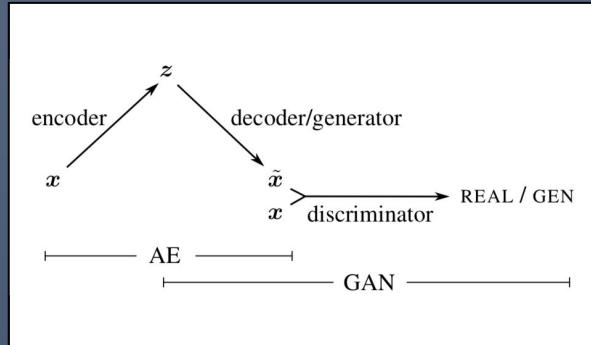


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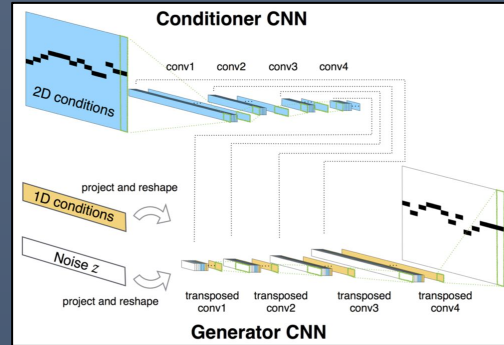


Deep learning handles abstract ideas

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VAE/GAN framework



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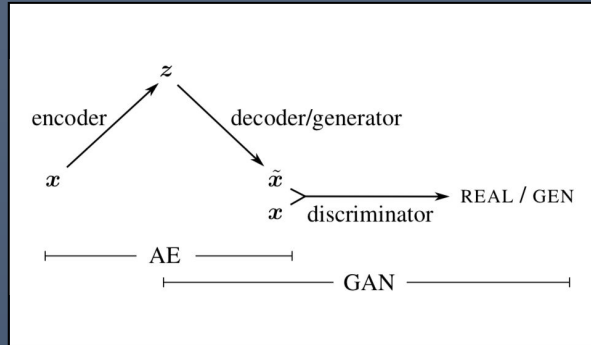


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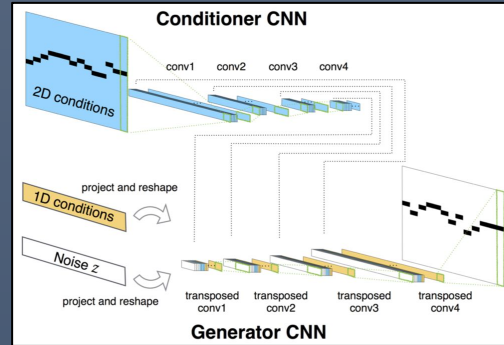


Grammar is rule-based

My project proposal incorporates the best of these poetry generation and deep learning techniques



VAE/GAN framework



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Grammar is rule-based

Questions?

References

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