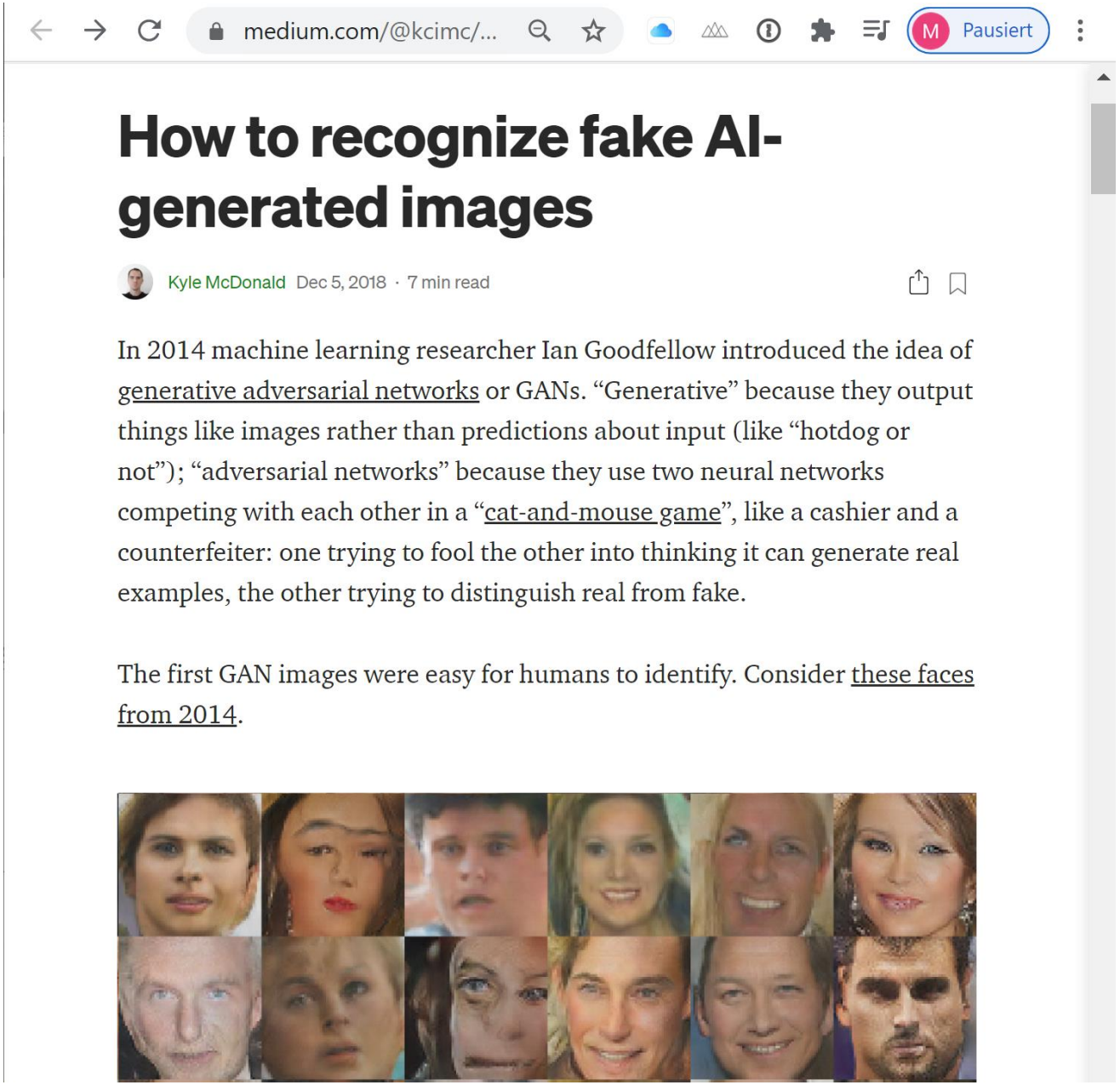
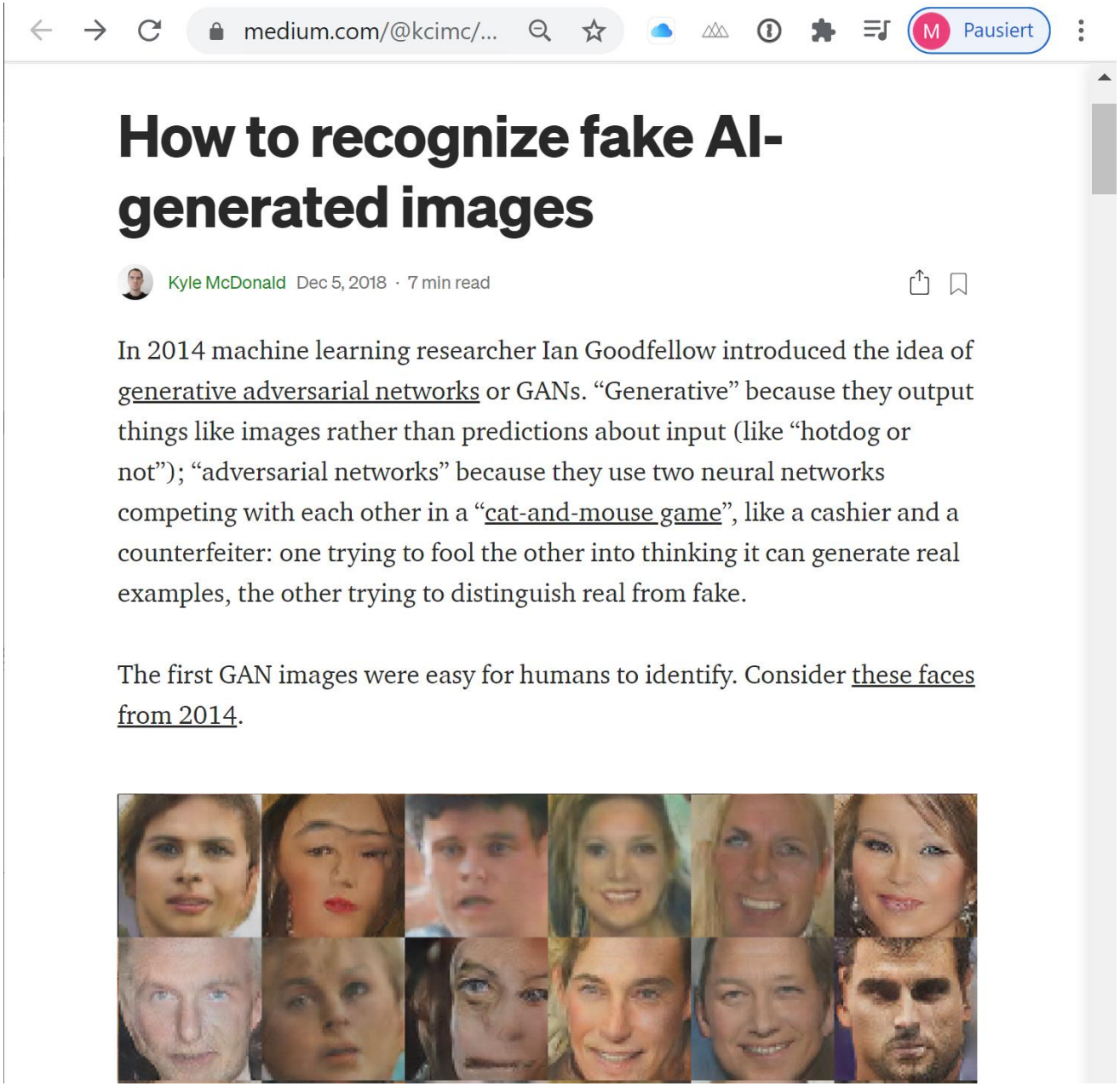


medium.com/@kcimc/how-to-recognize-fake-ai-generated-images-4d1f6f9a2842



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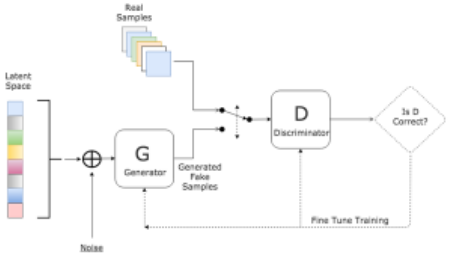
8 Machine Learning III
- Specialized Areas in Machine Learning
(4) Generative Adversarial Networks GAN

Generative Adversarial Networks (GAN)



A **Generative Adversarial Network (GAN)** is a class of **machine learning** frameworks designed by **Goodfellow** and his colleagues in **2014**.

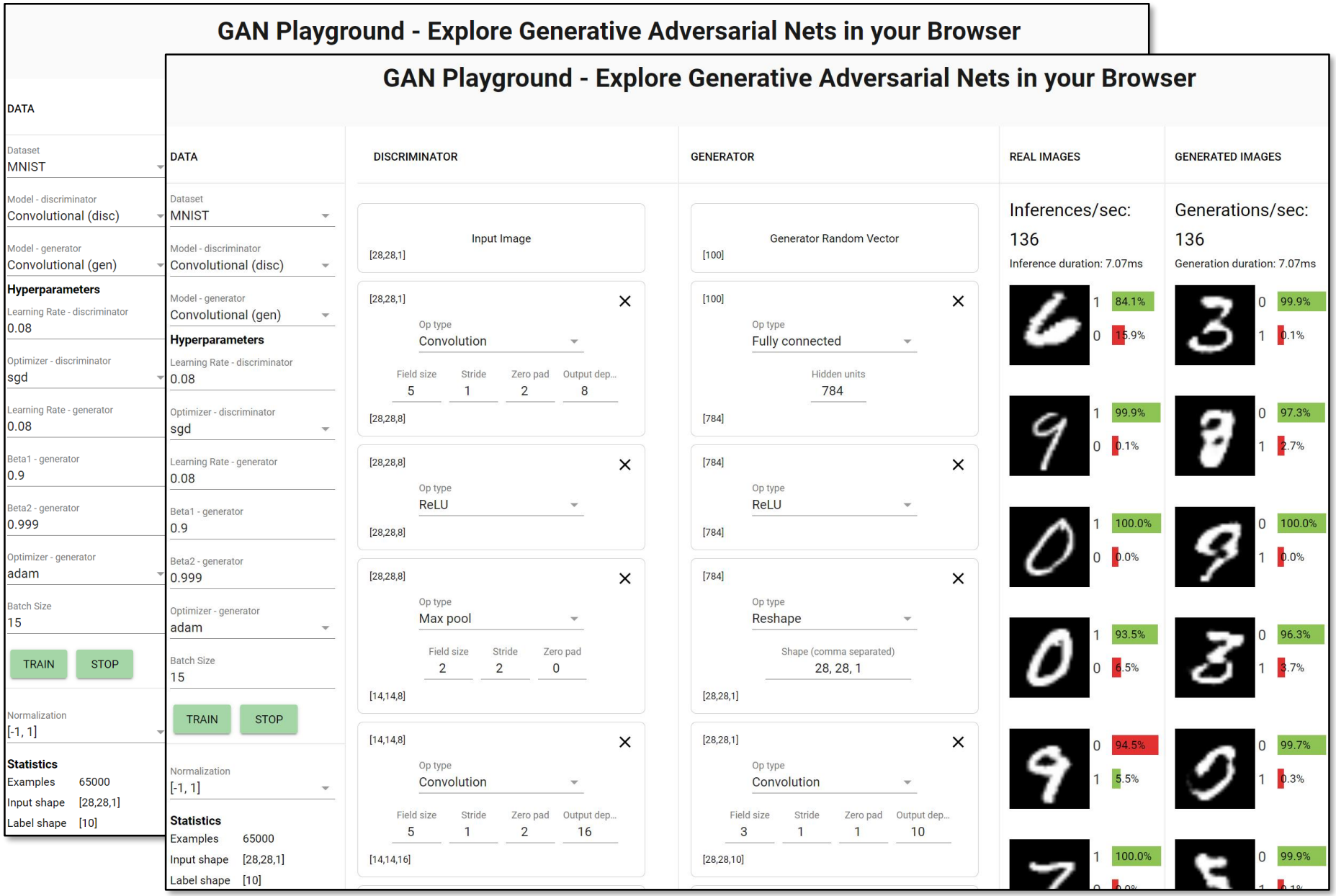
Two neural networks contest with each other in a game. Given a **training set**, this technique learns to **generate new data** with the same statistics as the **training set**.

The **core idea** of a GAN is based on the **"indirect" training** through the **discriminator**, which itself is also being **updated dynamically**. This basically means that the **generator** is **not trained to minimize the distance to a specific image**, but rather to **fool the discriminator**. This enables the model to learn in an **unsupervised manner**. (**Wikipedia**)

StyleGAN: Motivation Style Transfer

Intuitive Guide to Neural Style Transfer, 2019
towardsdatascience.com/light-on-math-machine-learning-intuitive-guide-to-neural-style...

GAN Playground in Browser

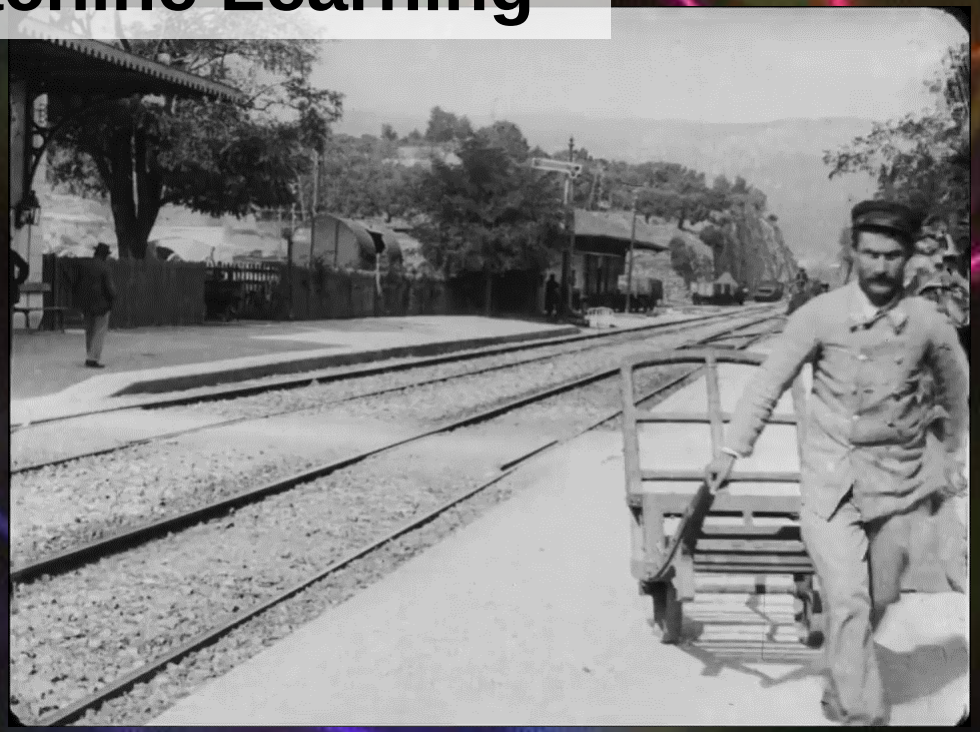


reiinakano.com/gan-playground/

8 Machine Learning III
- Specialized Areas in Machine Learning

Content:

1. **Transfer Learning** & Teachable Machine
2. **YOLO** & Real-Time Object Detection
3. **Autoencoder** & Super Sampling
4. **Generative Adversarial Networks (GAN)**
5. **Reinforcement Learning**
6. **The Human Role** in **Machine Learning Live**
7. **Summary**



Michael Amberg

Todays Content:

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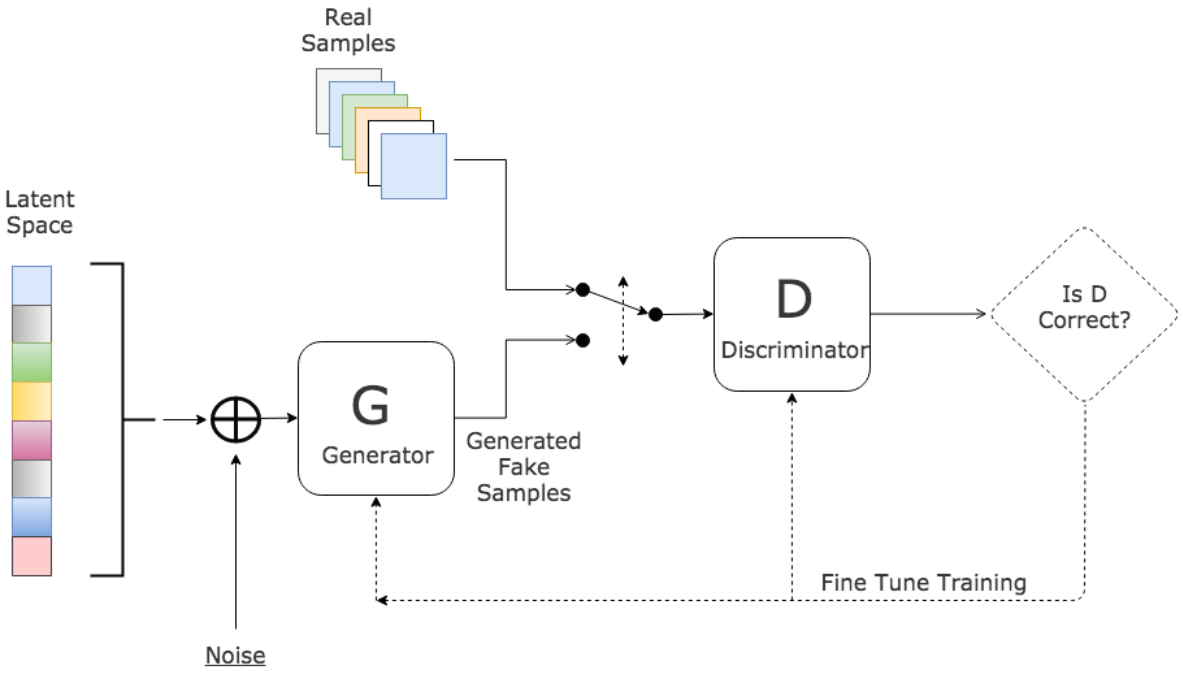
4. Generative Adversarial Networks (GAN)

StyleGAN2 Interpolation Loop, 2019, 15min
www.youtube.com/watch?v=6E1_dgYlifc

Generative Adversarial Networks (GAN)



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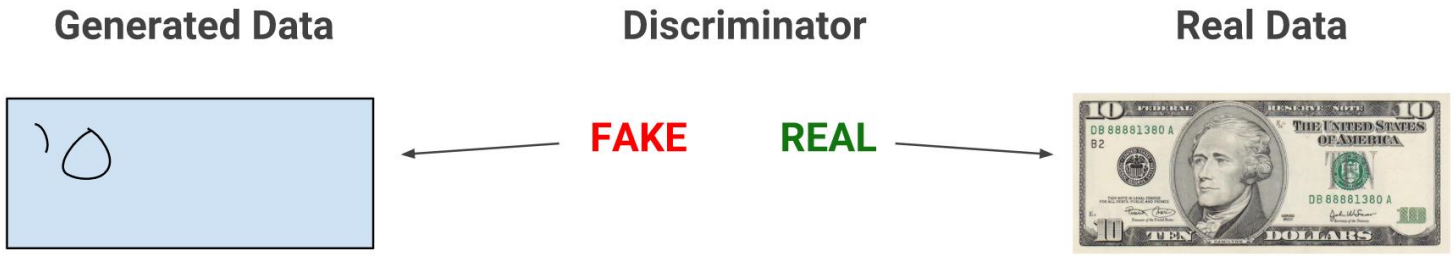
Generative Adversarial Networks (GAN)

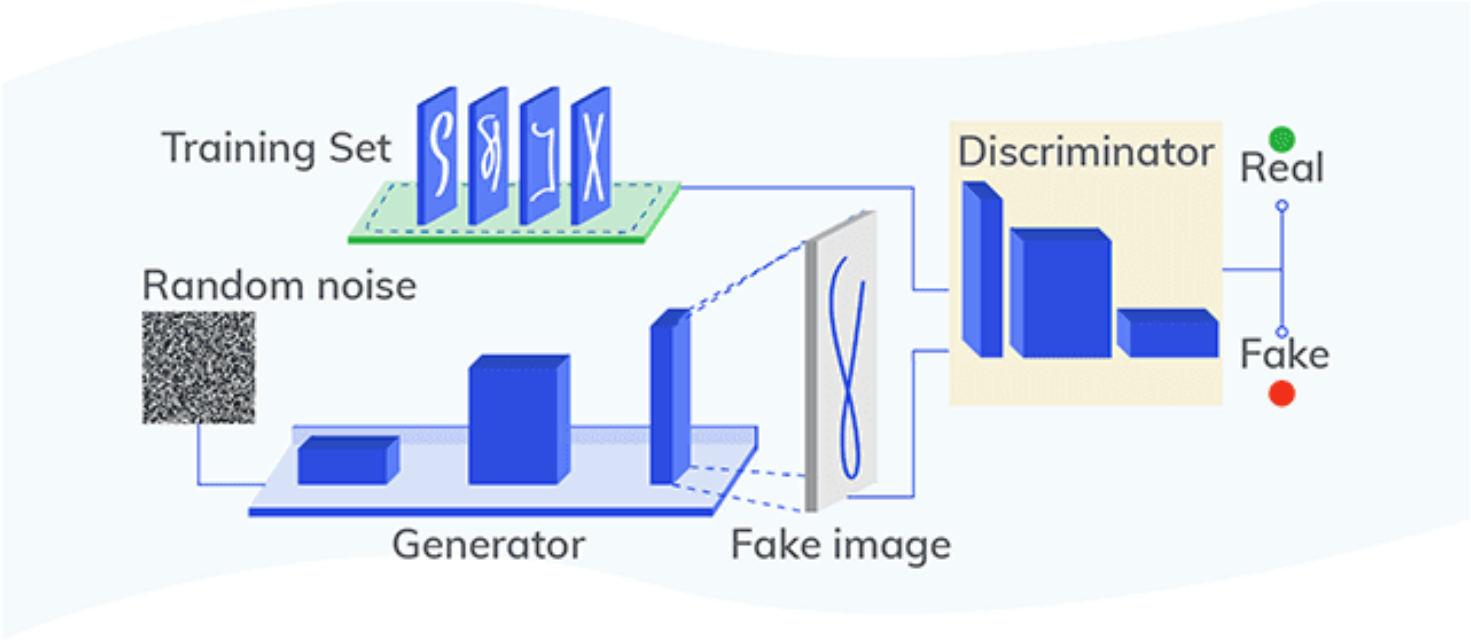


As training progresses, the generator gets closer to producing output that can fool the discriminator:

Finally, if generator training goes well, the discriminator gets worse at telling the difference between real and fake. It starts to classify fake data as real, and its accuracy decreases.

Overview of GAN Structure
developers.google.com/machine-learning/gan/gan_structure

Generative Adversarial Networks (GAN)

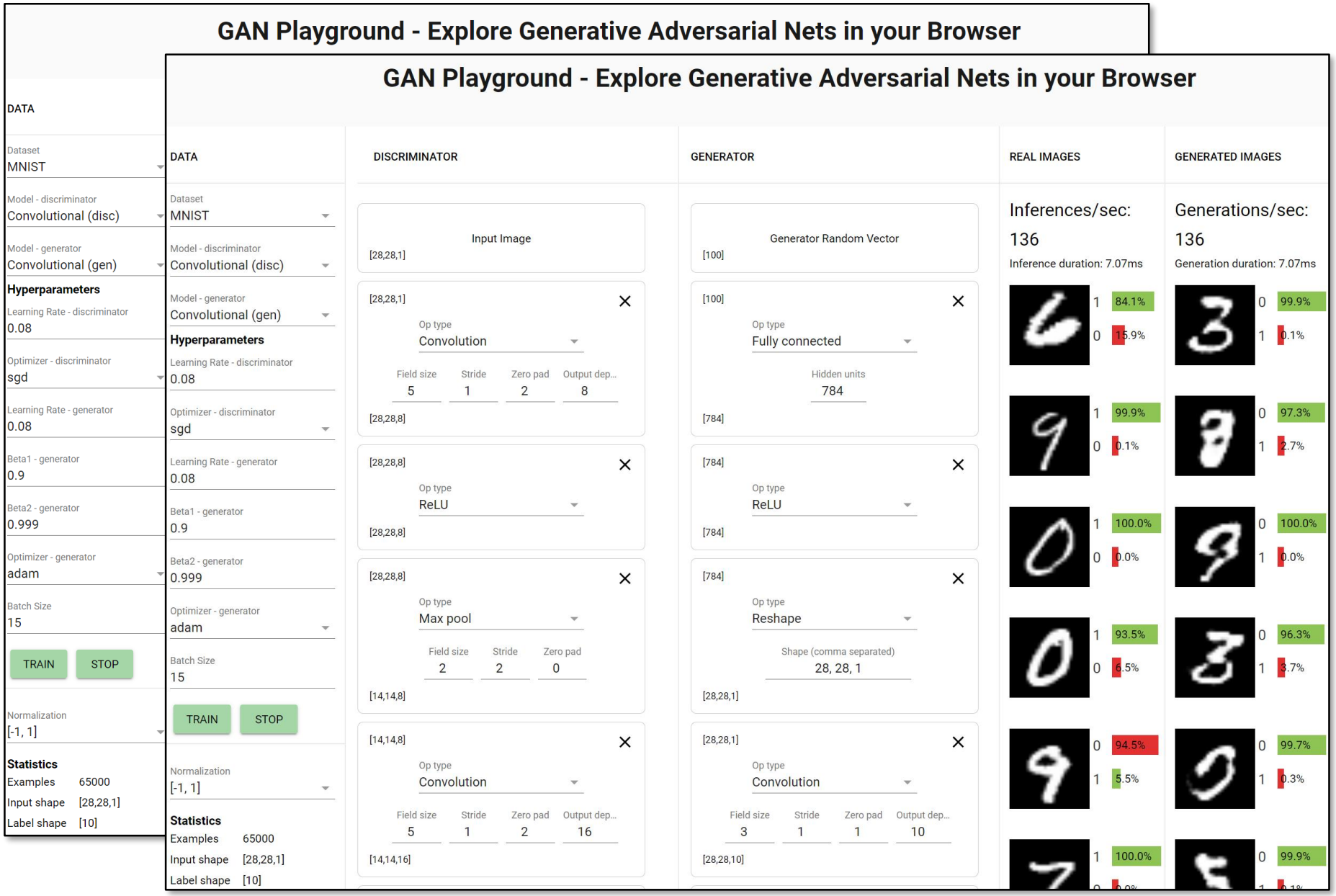


GANs' potential for both **good** and **evil** is **huge**, because they can **learn to mimic any distribution of data**. That is, **GANs** can be **taught to create worlds eerily similar** to our own in any domain: **images, videos, music, speech**.

They are **robot artists** in a sense, and their **output is impressive**.
But they can **also** be **used** to **generate fake media content**,
and are the technology underpinning **Deep Fakes**.

A Beginner's Guide to Generative Adversarial Networks (GANs)
wiki.pathmind.com/generative-adversarial-network-gan

GAN Playground in Browser



reiinakano.com/gan-playground/

StyleGAN2: Playground ThisPersonDoesNotExist

https://thispersondoesnotexist.com/

7 Craziest Tech Products Of **CES 2020**! - **Air Taxi**