



Zero-to-Hero Deep Learning in Python

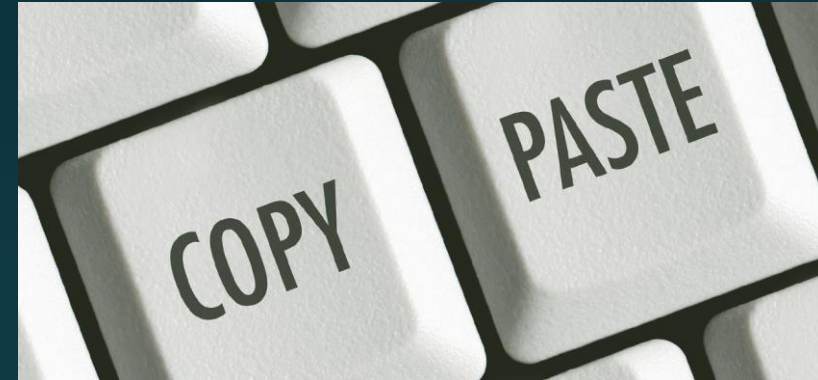
GANs for Fashion Prediction

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Your top friends



Also good places:

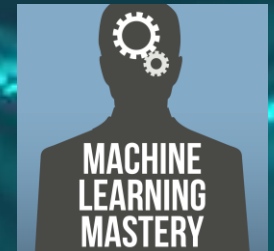


Medium

medium.com

towards
data science

towardsdatascience.com



machinelearningmastery.com/



Keras

keras.io/



stackoverflow.com/

Examples of GANs



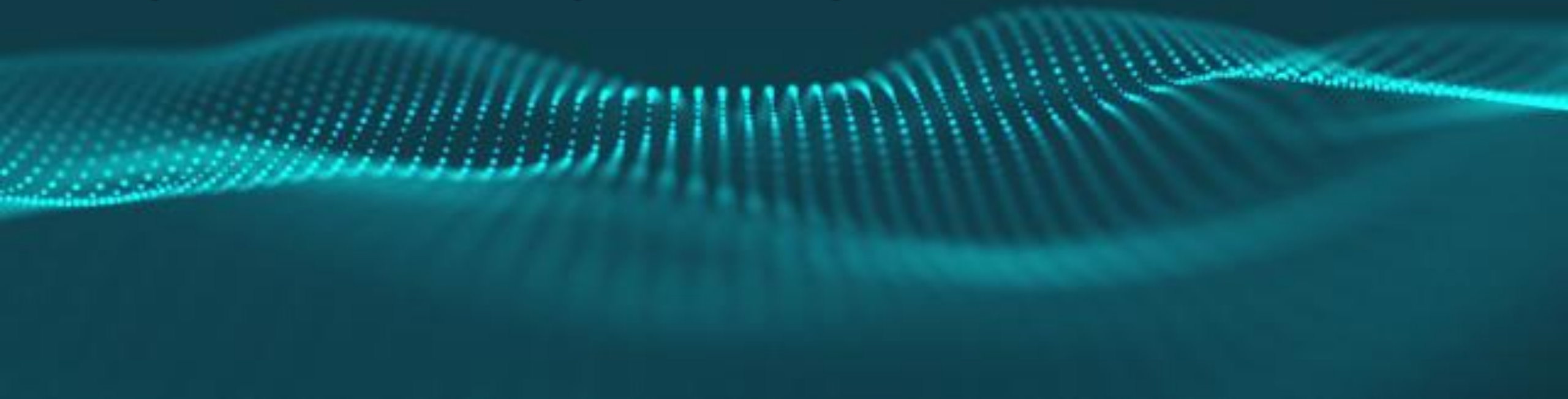
Obama DeepFake:

<https://www.youtube.com/watch?v=l82PxsKHxYc>

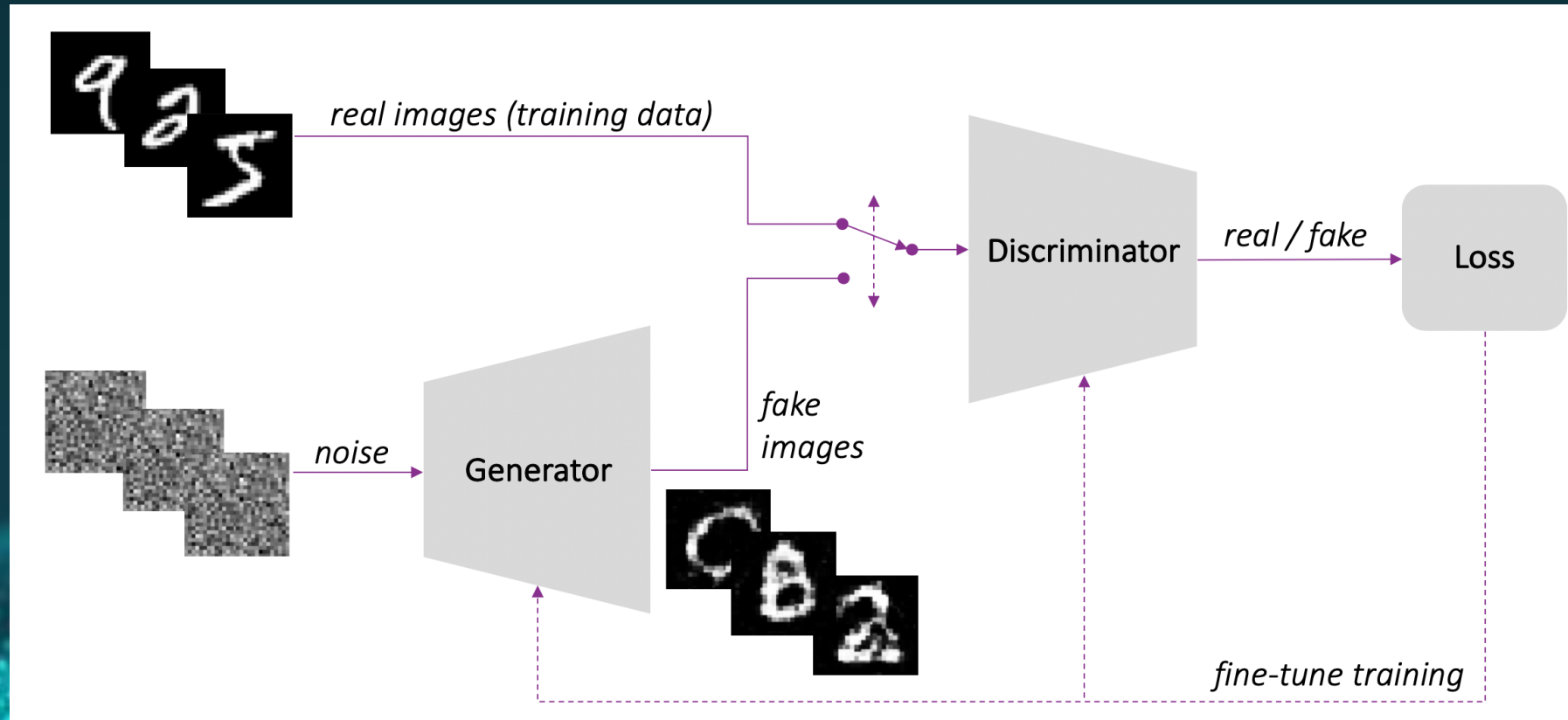
Fake Faces:

<https://www.thispersondoesnotexist.com/>

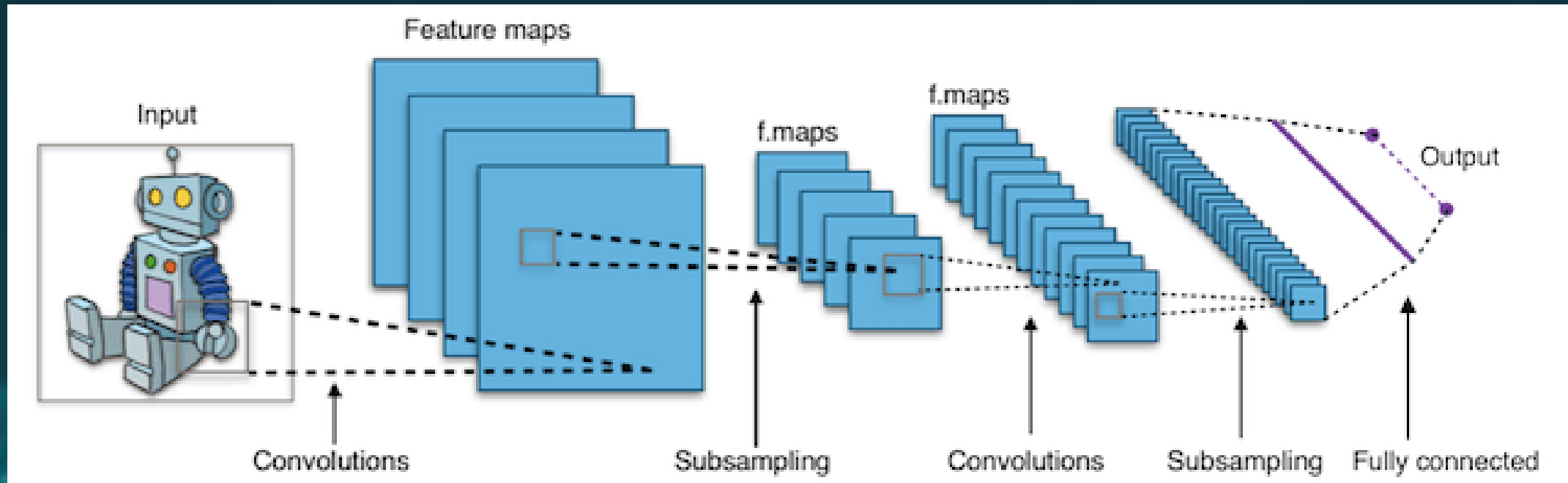
The site is the creation of Philip Wang, a software engineer at Uber, and uses research released last year by chip designer Nvidia to create an endless stream of fake portraits. The algorithm behind it is trained on a huge dataset of real images.



Vanilla GAN:

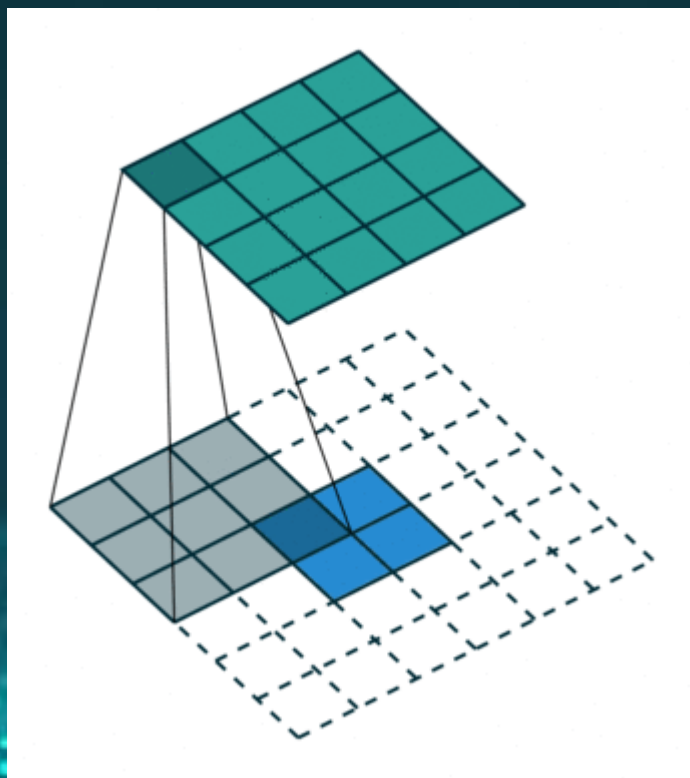


Quick update on CNNs:

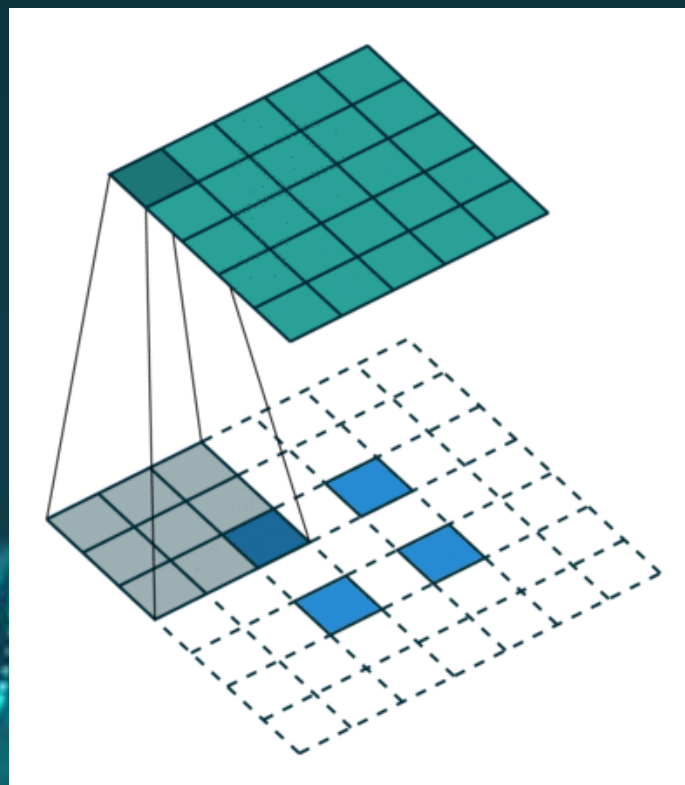


So what's a transposed convolution?

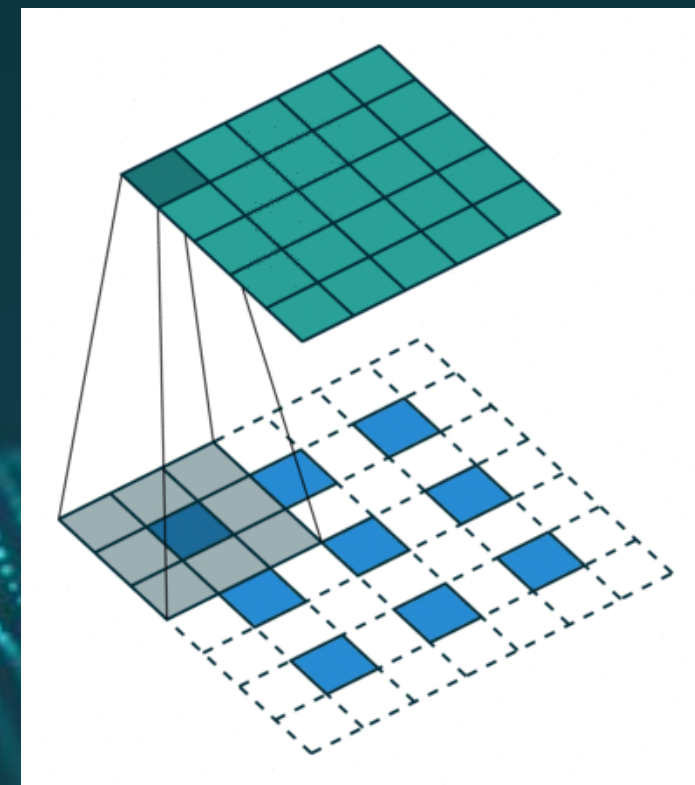
Blue maps are input, and the cyan maps are output.



No Padding
No strides



No Padding
Strides



Padding
Strides

Problems / Difficulties:



BALANCING THE DISCRIMINATOR TRAINING WITH THE GENERATOR TRAINING!

- Discriminator too strong (near 100% accuracy)? The generator will only produce “wrong” images. It has no idea how it can improve, as there’s no direction to how it should change – it’s unable to learn.
- Too weak? Generator has won – produces “true” images, but these may not be good representations – it’s stopped learning.

Conversely:

- Generator too strong? Can’t train the discriminator – it doesn’t know what’s real and fake anymore, it’s just blind guessing.
- Too weak? It doesn’t know how to train. It doesn’t know the direction it needs to go in order to improve.

Adaptions...



- Conditional GANs (instead of just outputting “fashion” images, we can get the GAN to produce specific types of clothing).
- Cycle GANs – these map one domain into another (ie. could map brown haired people to blonde haired people, but would then also try to do blonde back to brown to make sure that the blonde hair image is a true encoded representation of the brown haired image).
- Stack GAN (<https://arxiv.org/pdf/1612.03242.pdf>) - converts text descriptions to high fidelity images.

Fashion GAN Workbook:

<https://tinyurl.com/osgd-fashion-generator>