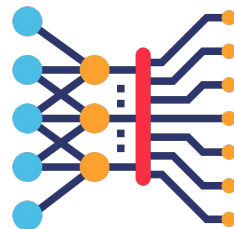

Super-realistic facial generations

— Deep Learning 2020 - Final Project —

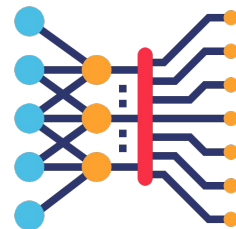
Marta Mir - Fernando Marín - Mateu Busquets



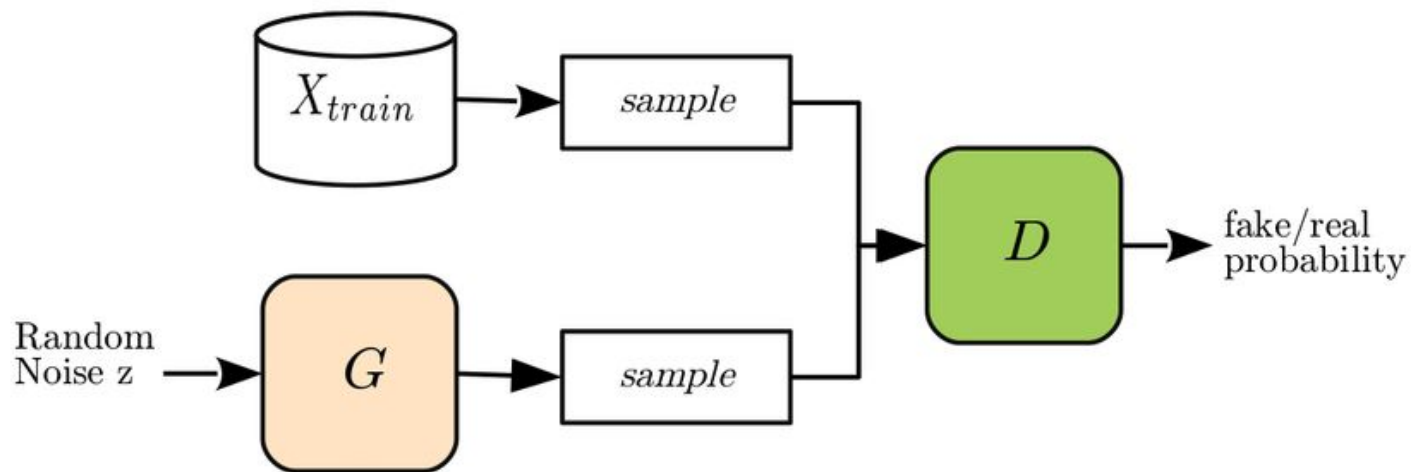
Problem and motivation

- We can create faces that doesn't exist
 - ◆ Free use of this faces
- We want to see if we can create images that cannot be differentiated from real images

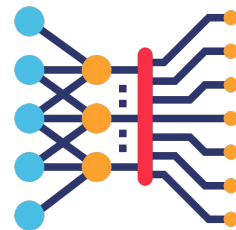
Method used



→ GAN



Method used

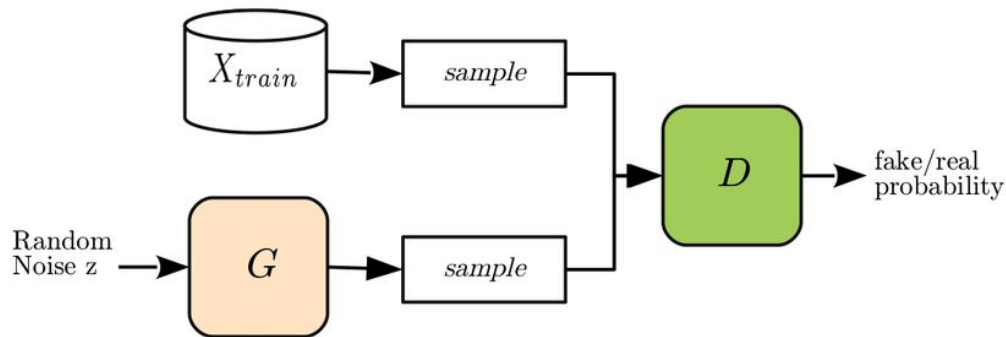


- Generator wants to minimize:

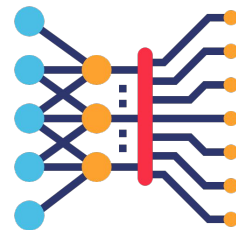
$$\log(1-D(G(z)))$$

- Discriminator wants to maximize:

$$1-D(G(z))$$



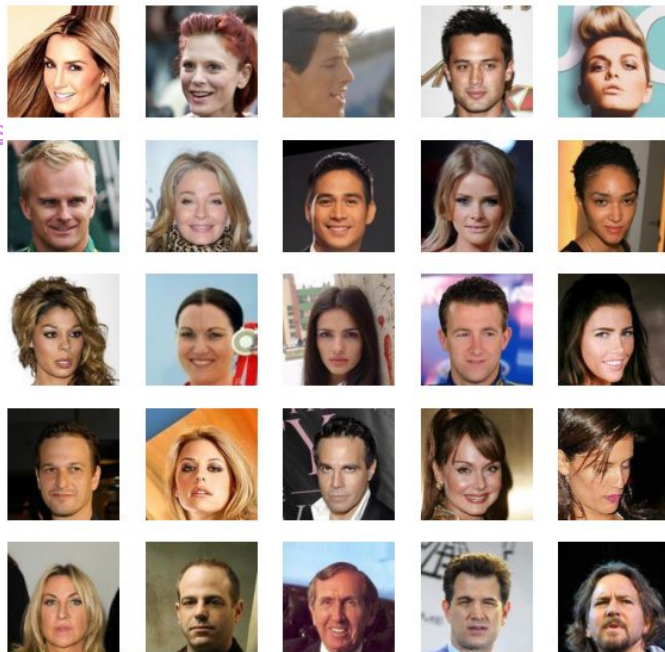
Experimental setup



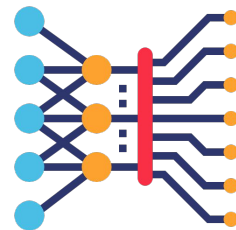
→ First dataset.

◆ CelebFaces

◆ <https://www.kaggle.com/jes>



Experimental setup



→ Second dataset

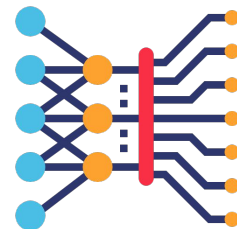
◆ Animal Faces

◆ <https://www.kaggle.com/ar>



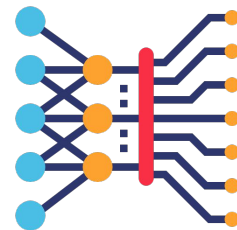
Results CelebFaces

- images: 496
- iterations: 50



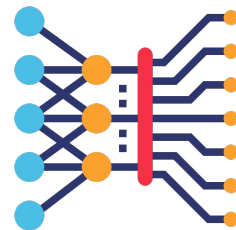
Results CelebFaces

- images: 496
- iterations: 100



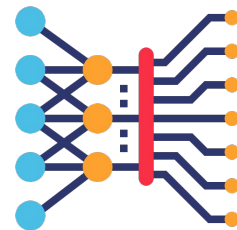
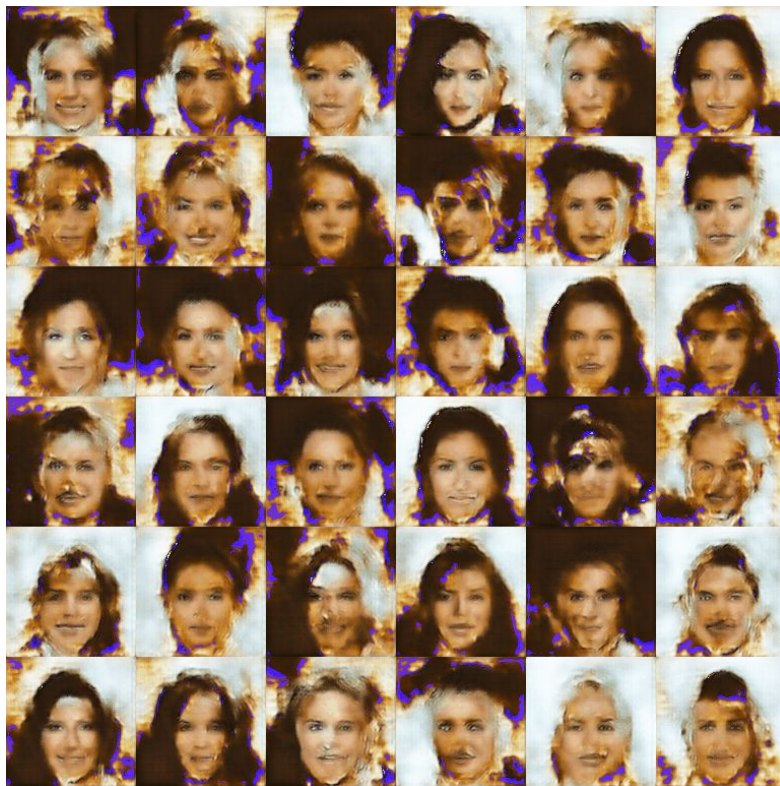
Results CelebFaces

- images: 496
- iterations: 500

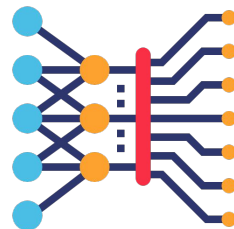


Results CelebFaces

- images: 496
- iterations: 1000



Results CelebFaces



→ GAN has been trained

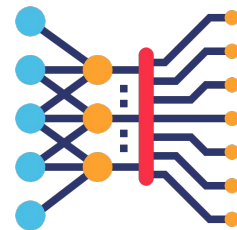


→ Now we reduce the number of iterations.

◆ Will we get the same results?

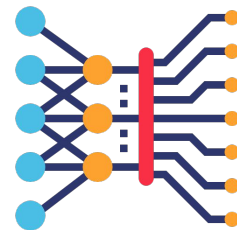
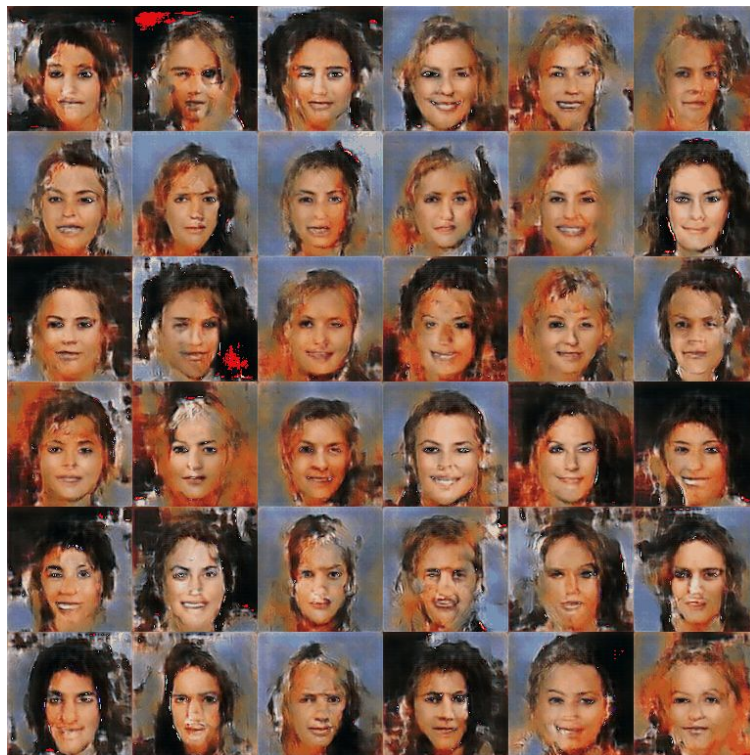
Results CelebFaces

- images: 496
- iterations: 50

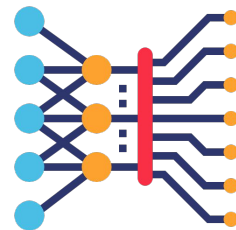


Results CelebFaces

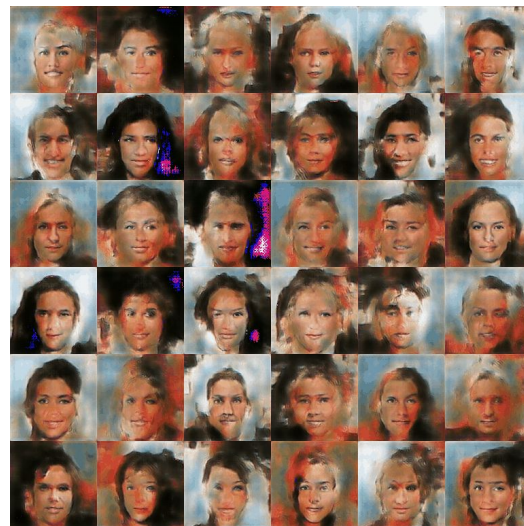
- images: 496
- iterations: 100



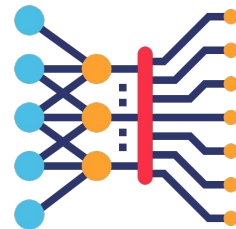
Results CelebFaces



→ Not train vs train (50 iterations)

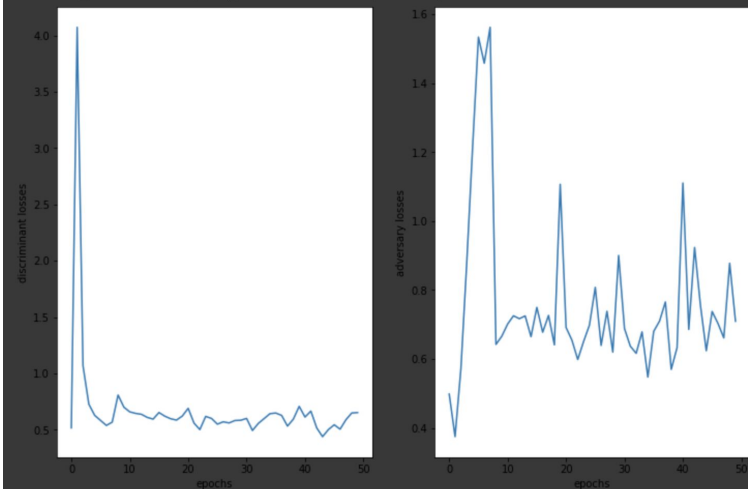


Results CelebFaces

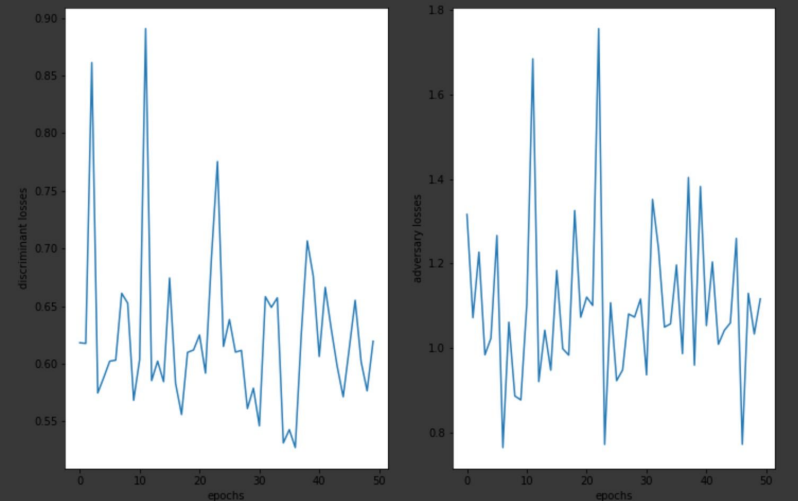


→ Not train vs train (50 iterations)

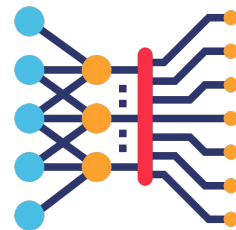
50/50: d_loss: 0.6527, a_loss: 0.7096. (6.3 sec)



50/50: d_loss: 0.6196, a_loss: 1.1166. (6.5 sec)

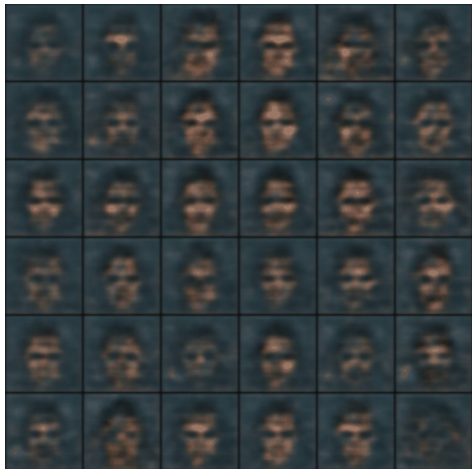


Results CelebFaces

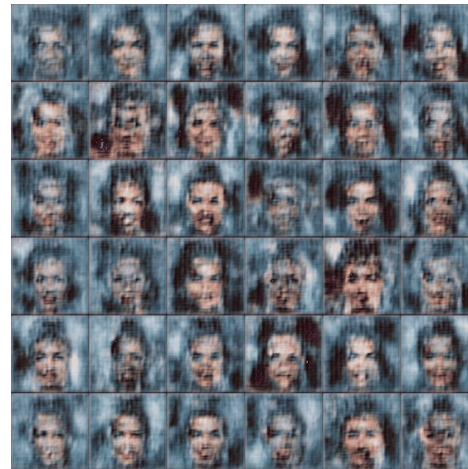


→ What happens if we have few photos?

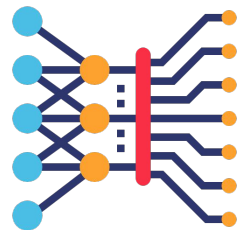
50 images & 100 iterations



50 images & 1000 iterations

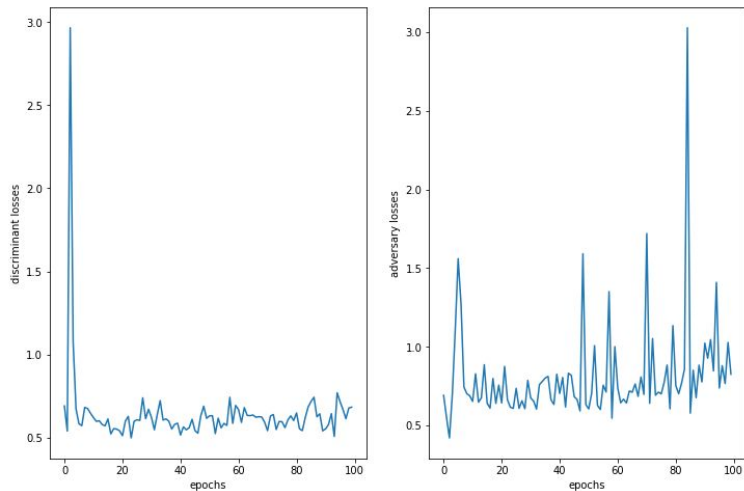


Results CelebFaces

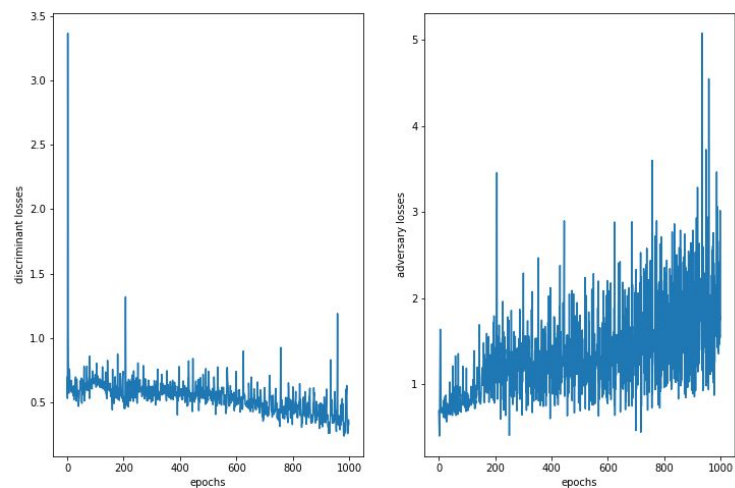


→ What happens if we have few photos?

50 images & 100 iterations

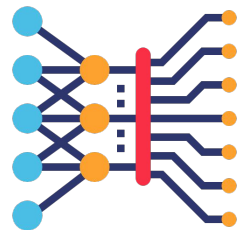
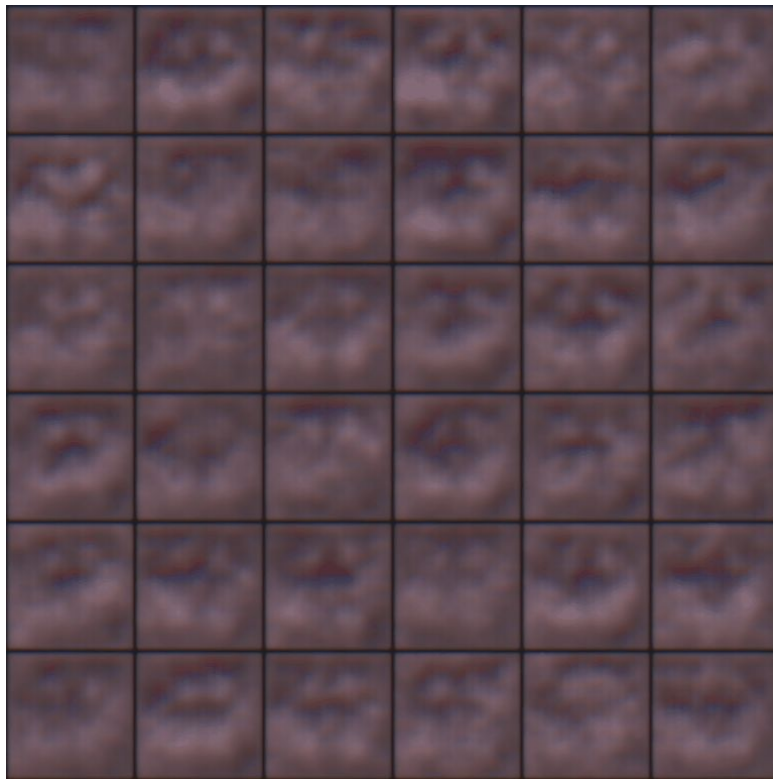


50 images & 1000 iterations



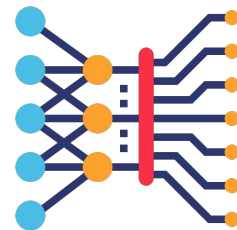
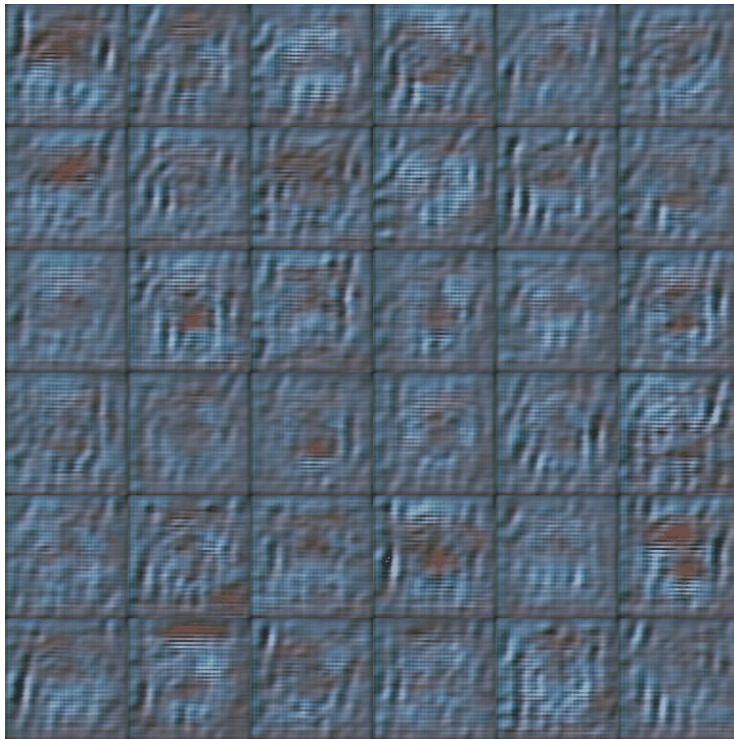
Results Animal Faces

- images: 496
- iters: 100

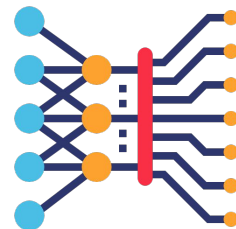


Results Animal Faces

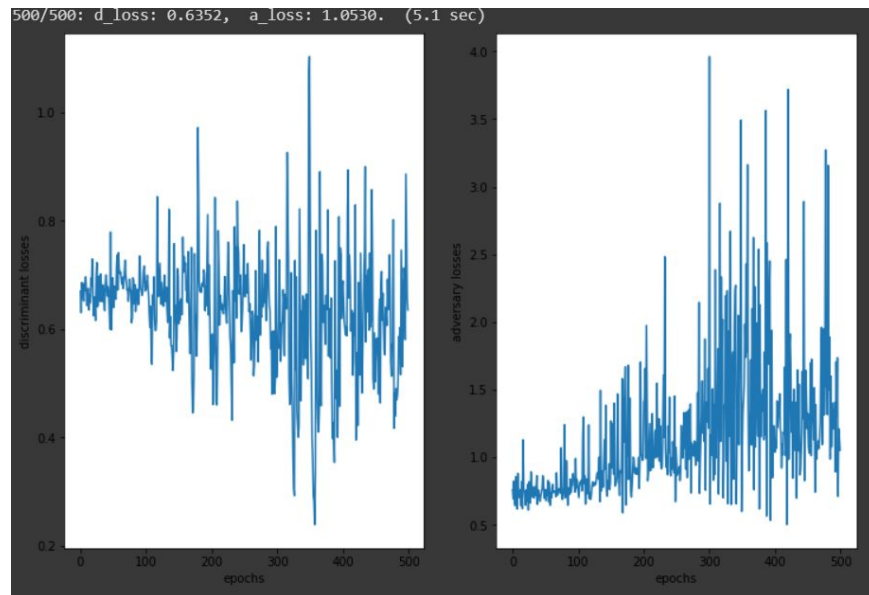
- images: 496
- iters: 500



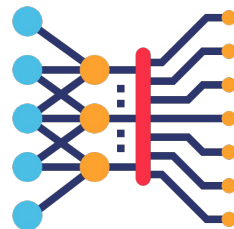
Results Animal Faces



→ Why?



Conclusions



- Results are proportional to:
 - ◆ Number of photos
 - ◆ Number of iterations
- We obtain better results if we train GAN
- Problem:
 - ◆ Computational cost