

CycleGAN
Game Map Generator

Main objective of the study is to generate game maps from aerial photos by using open source code of Jun-Yan Zhu.

GAME MAP GENERATOR

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Objective

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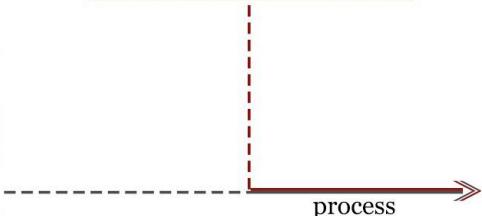
Objective

Main Logic

Purpose is to generate game maps alike map of the game "Assassins Creed Origins".

Two mains steps occur in the flowchart:

- 1) Picking the aerial or satellite images of the desirable location;
- 2) Converting it into the game map.



Generated Map

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Method

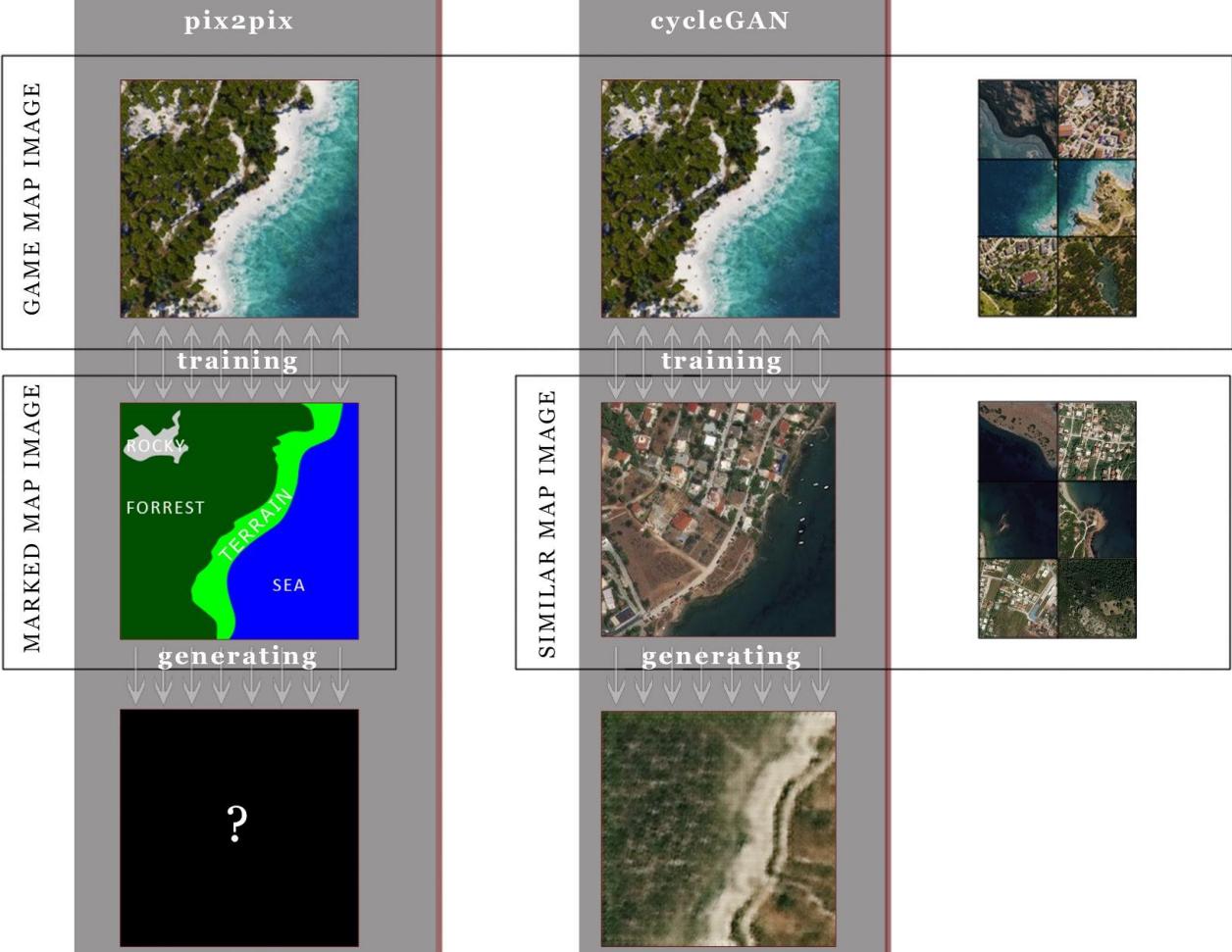
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Method

Suitable Options



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Dataset

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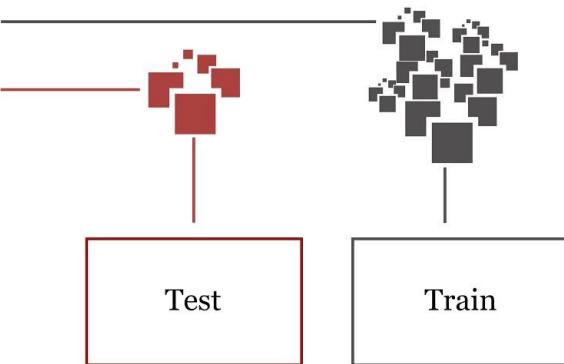
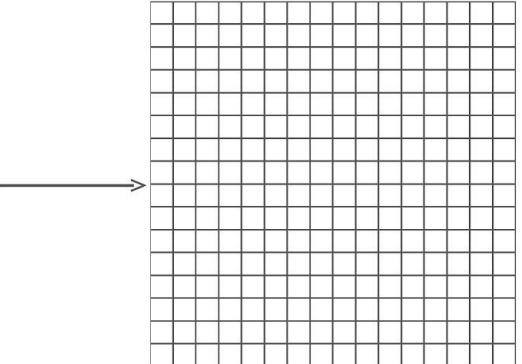
Dataset

Dataset X

Dataset X consists of game map images.

Data is scrapped from a website (is indicated in bibliography)
frame by frame via a python script which is written for this
purpose.

Zoom level is adjusted in relation to Dataset Y.



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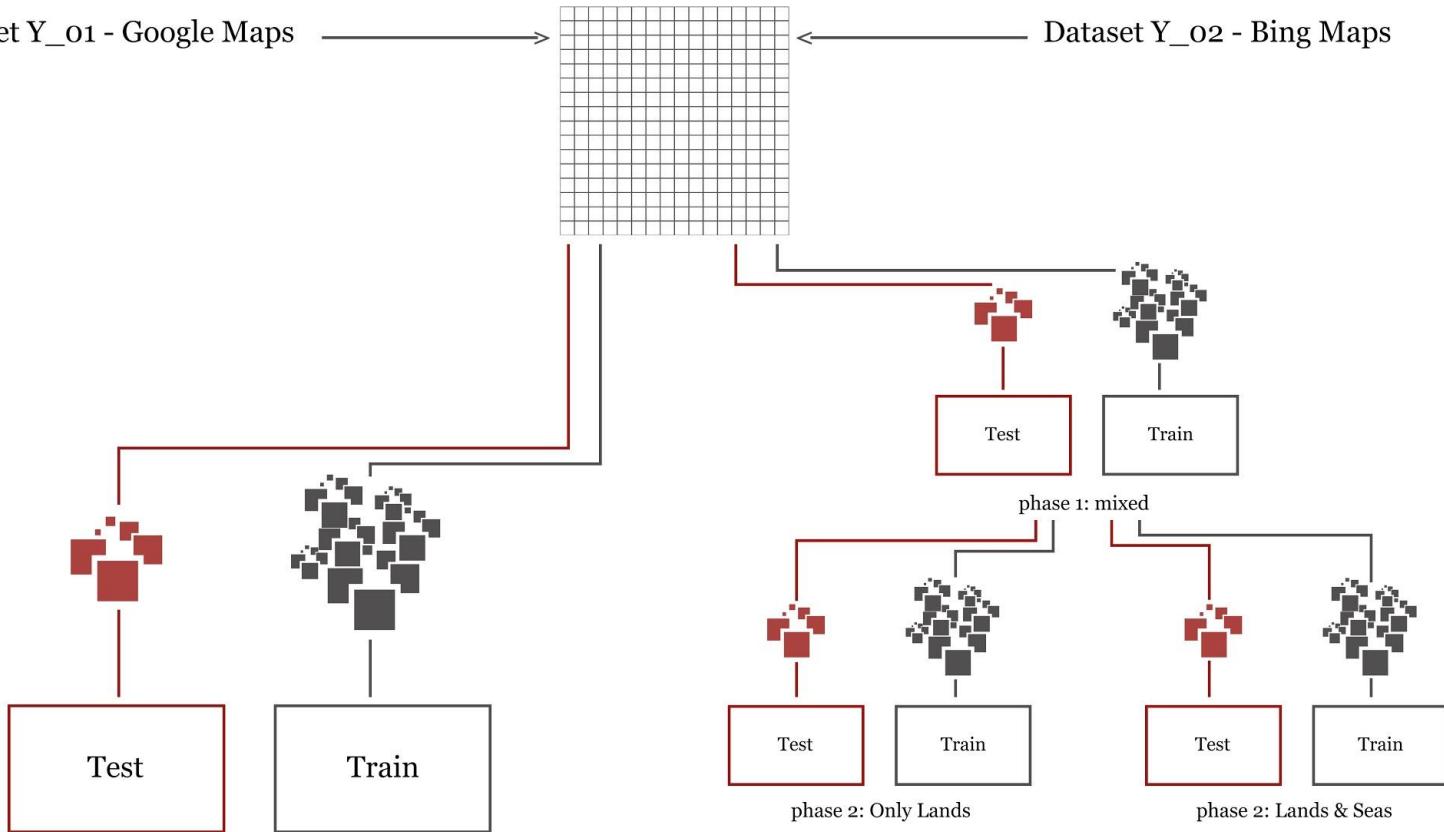
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Dataset

Dataset Y

Dataset Y_01 - Google Maps

Dataset Y_02 - Bing Maps



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Training & Generating Samples

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Training & Generating Samples

Training

Training has been done with various combinations of different;

- Datasets
- Image Sizes
- Epochs

Alternatives are:

Dataset X:

- AC game map

Dataset Y:

- Google Maps
- Bing Maps phase 1 (mixed)
- Bing Maps phase 2 (only lands)
- Bing Maps phase 2 (seas & lands)

Image Sizes

- 128*128
- 256*256

Epochs

- 200
- 500
- 1000
- 2500
- 3000
- 10000

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Training & Generating Samples

Samples

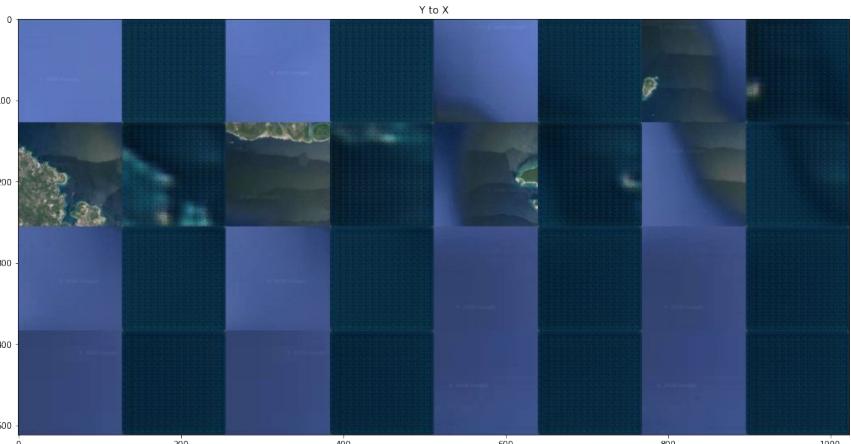
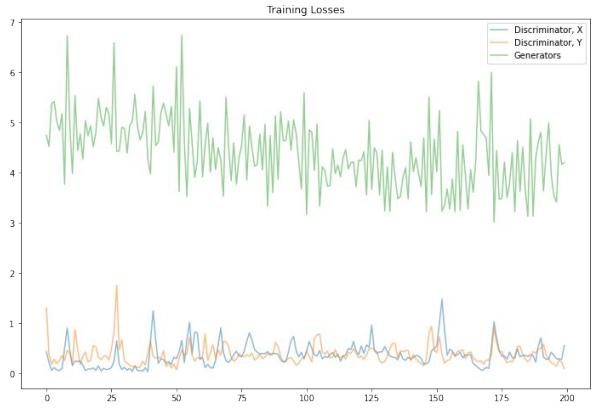
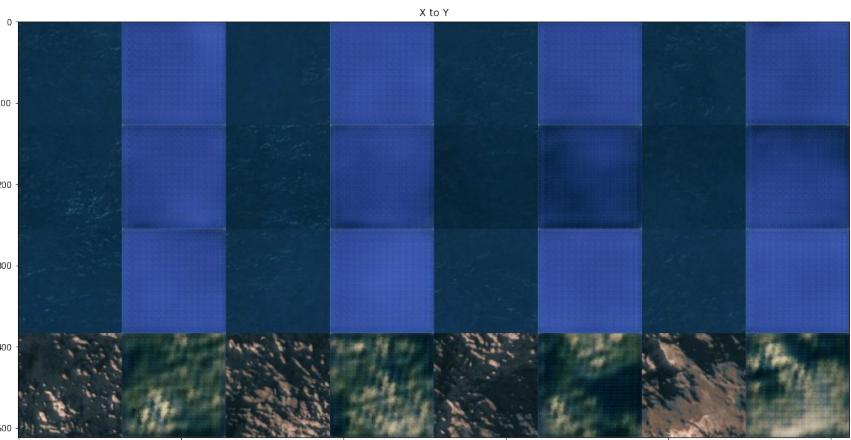
Sample #001

Dataset X: AC game map

Dataset Y: Google Maps

Image Size: 128*128

Epoch: 200



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Training & Generating Samples

Samples

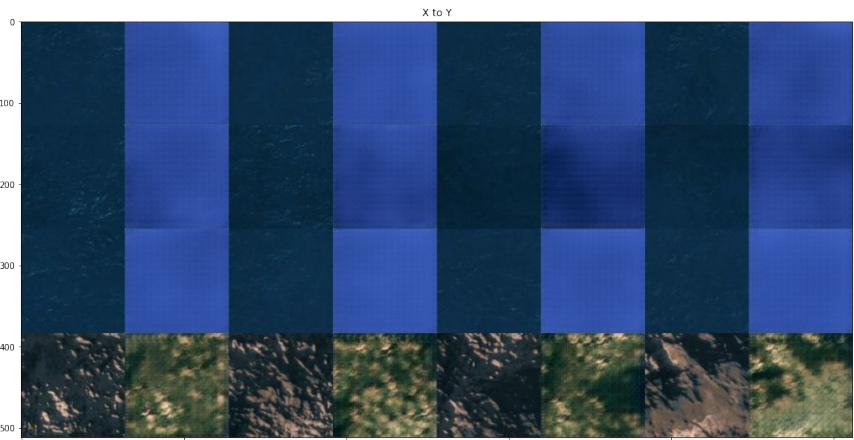
Sample #002

Dataset X: AC game map

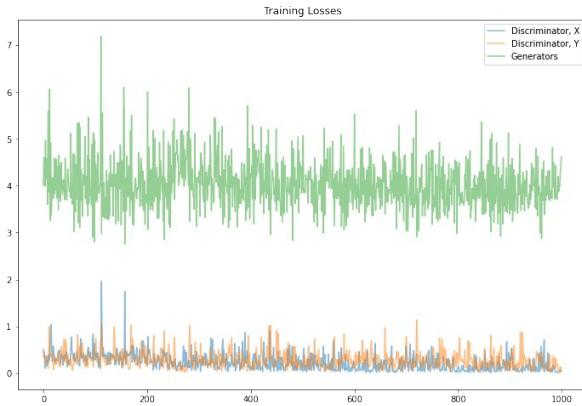
Dataset Y: Google Maps

Image Size: 128*128

Epoch: 1000



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Training & Generating Samples

Samples

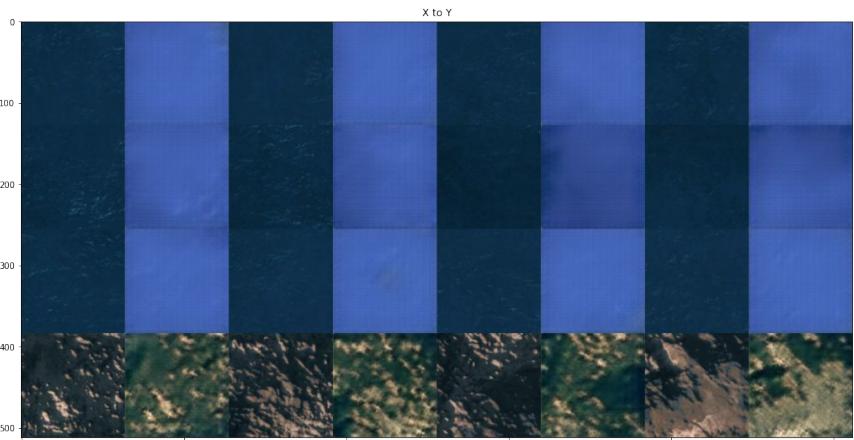
Sample #003

Dataset X: AC game map

Dataset Y: Google Maps

Image Size: 128*128

Epoch: 2500



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Training & Generating Samples

Samples

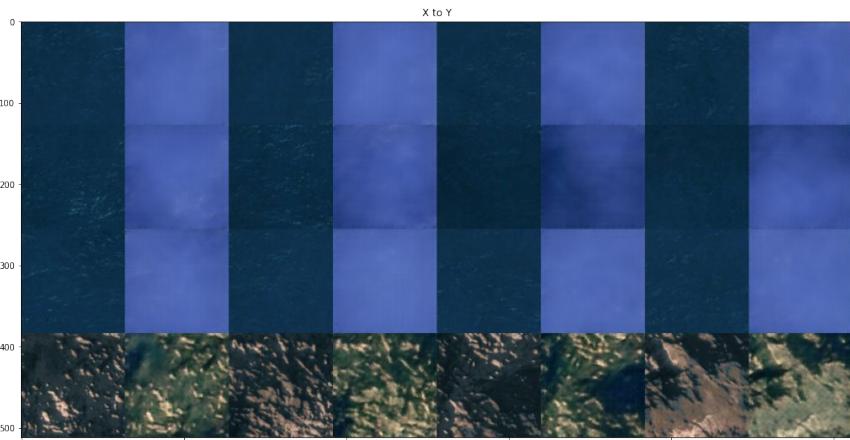
Sample #004

Dataset X: AC game map

Dataset Y: Google Maps

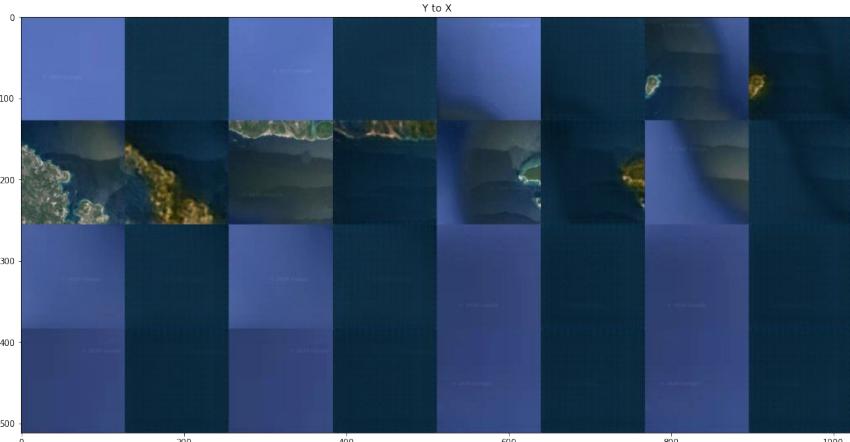
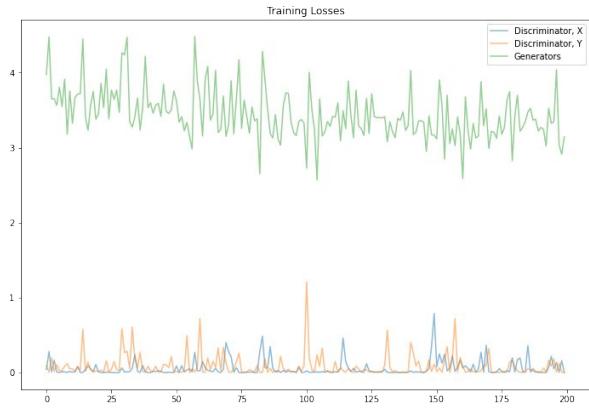
Image Size: 128*128

Epoch: 10000



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Training & Generating Samples

Samples

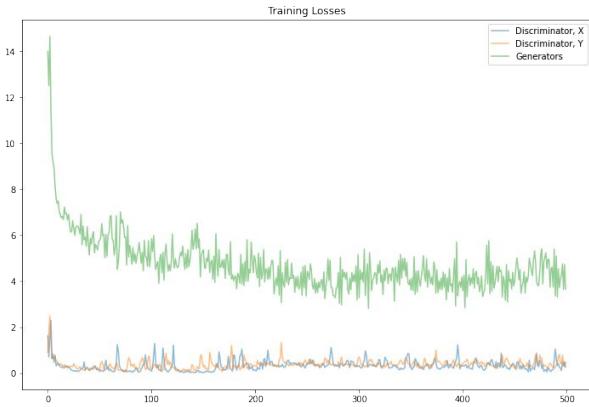
Sample #005

Dataset X: AC game map

Dataset Y: Google Maps

Image Size: 256*256

Epoch: 500



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Training & Generating Samples

Samples

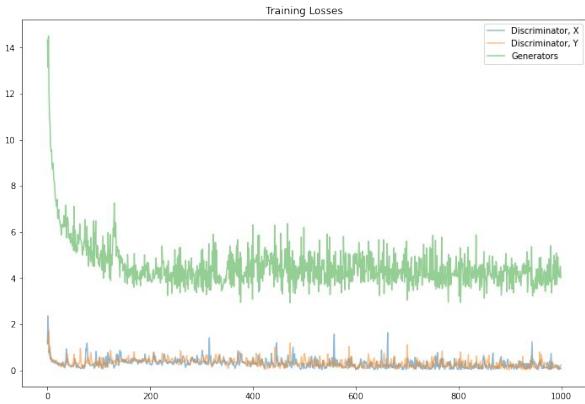
Sample #006

Dataset X: AC game map

Dataset Y: Google Maps

Image Size: 256*256

Epoch: 1000



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Training & Generating Samples

Samples

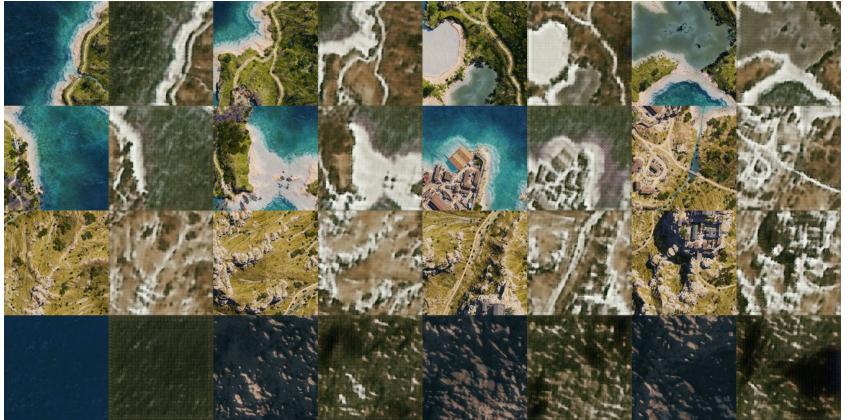
Sample #007

Dataset X: AC game map

Dataset Y: Bing Maps (phase 1 - mix)

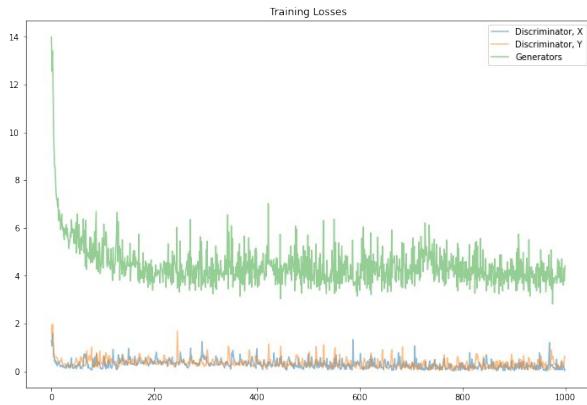
Image Size: 256*256

Epoch: 1000



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Training & Generating Samples

Samples

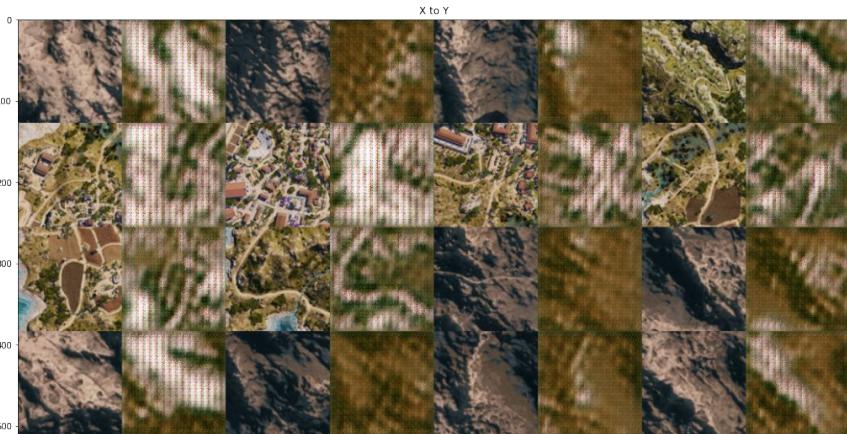
Sample #008

Dataset X: AC game map

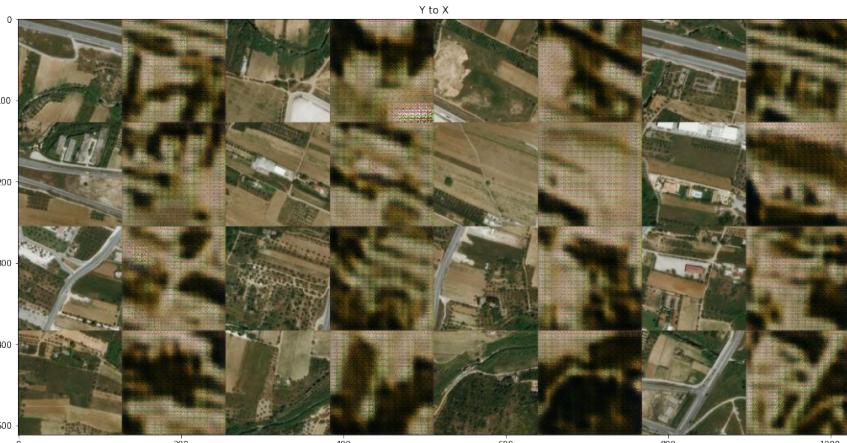
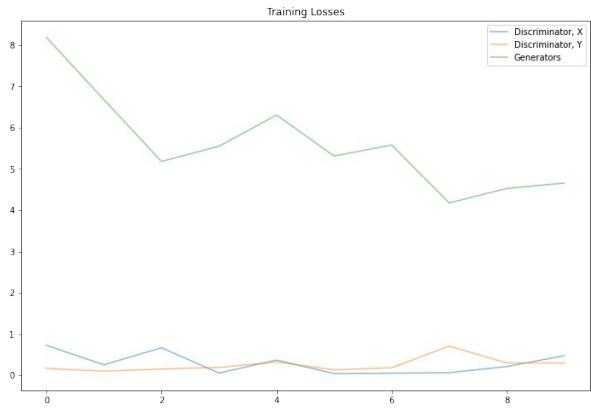
Dataset Y: Bing Maps (phase 2 - only lands)

Image Size: 128*128

Epoch: 200



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Training & Generating Samples

Samples

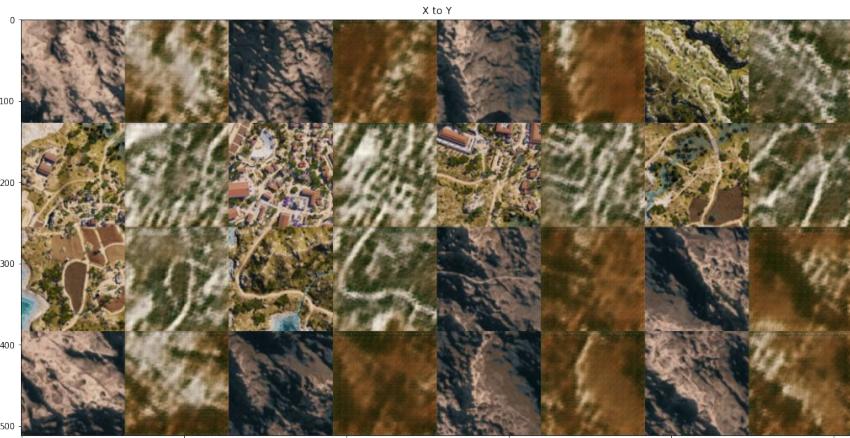
Sample #009

Dataset X: AC game map

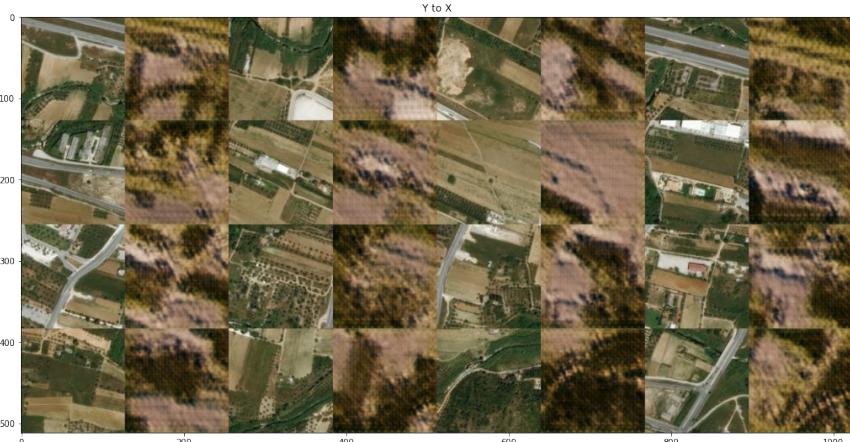
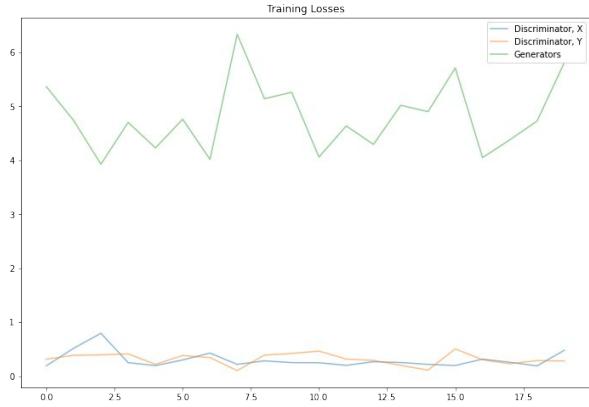
Dataset Y: Bing Maps (phase 2 - only lands)

Image Size: 128*128

Epoch: 500



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Training & Generating Samples

Samples

Sample #010

Dataset X: AC game map

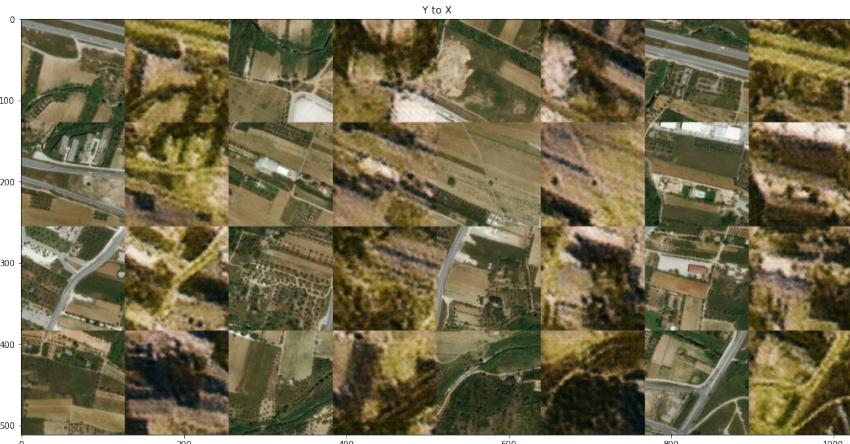
Dataset Y: Bing Maps (phase 2 - only lands)

Image Size: 128*128

Epoch: 1000



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Training & Generating Samples

Samples

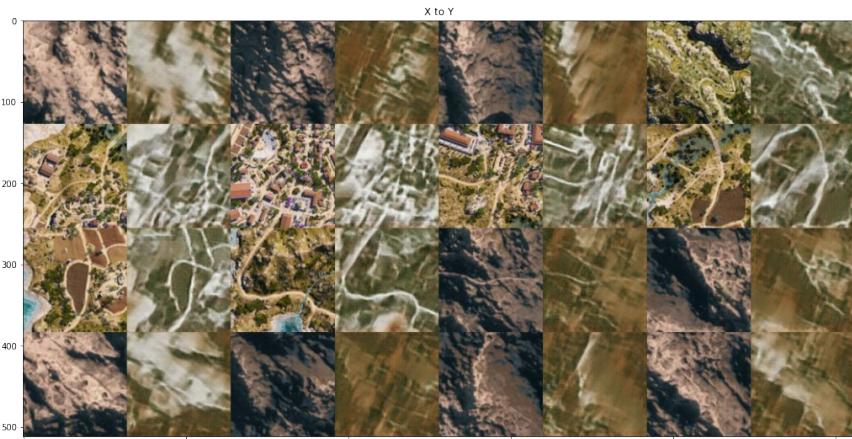
Sample #011

Dataset X: AC game map

Dataset Y: Bing Maps (phase 2 - only lands)

Image Size: 128*128

Epoch: 3000



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Training & Generating Samples

Samples

Sample #012

Dataset X: AC game map

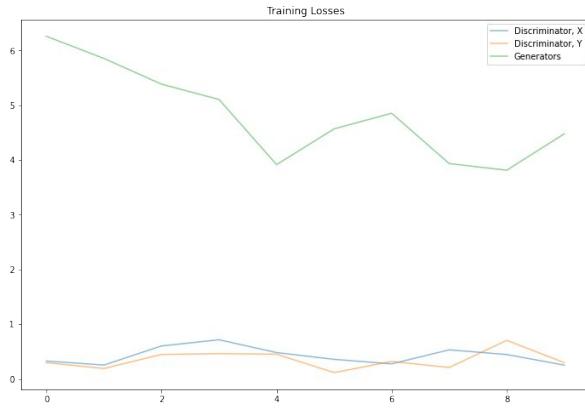
Dataset Y: Bing Maps (phase 2 - only lands)

Image Size: 256*256

Epoch: 200



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Training & Generating Samples

Samples

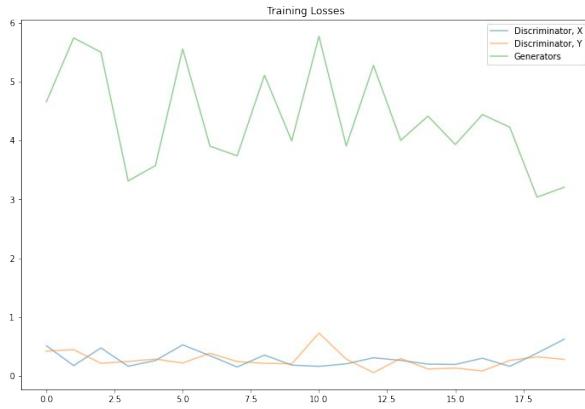
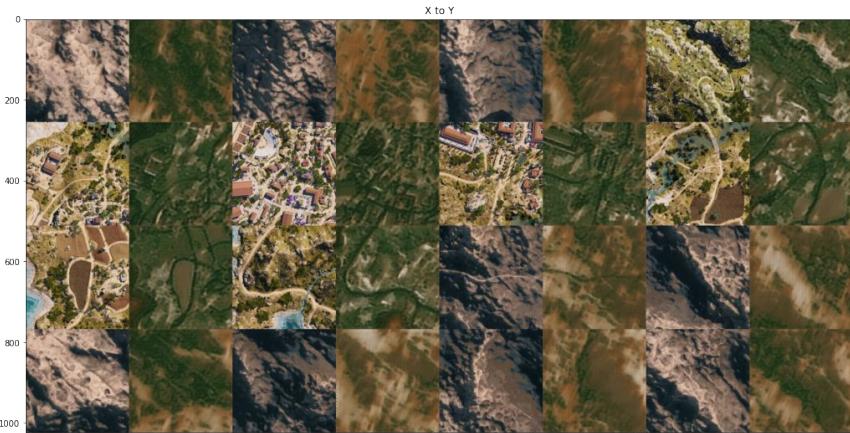
Sample #013

Dataset X: AC game map

Dataset Y: Bing Maps (phase 2 - only lands)

Image Size: 256*256

Epoch: 500



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Training & Generating Samples

Samples

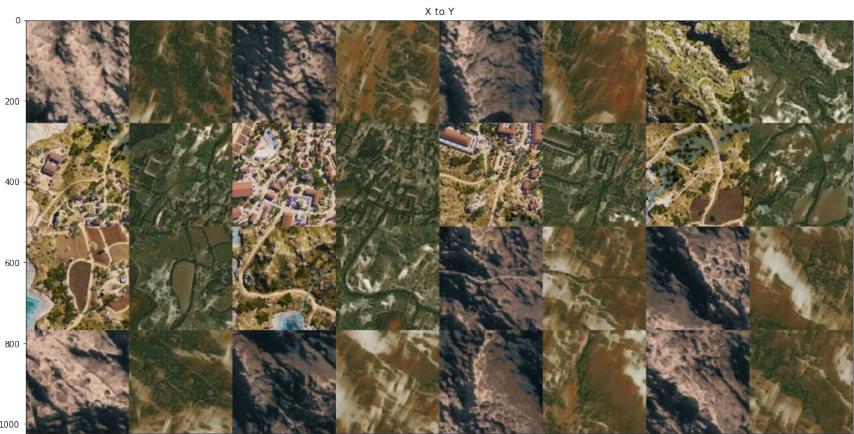
Sample #014

Dataset X: AC game map

Dataset Y: Bing Maps (phase 2 - only lands)

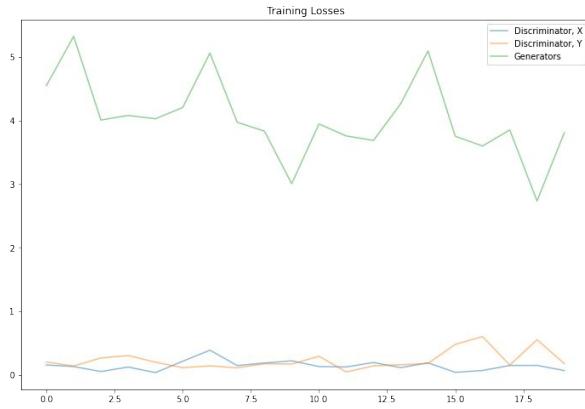
Image Size: 256*256

Epoch: 1000



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Training & Generating Samples

Samples

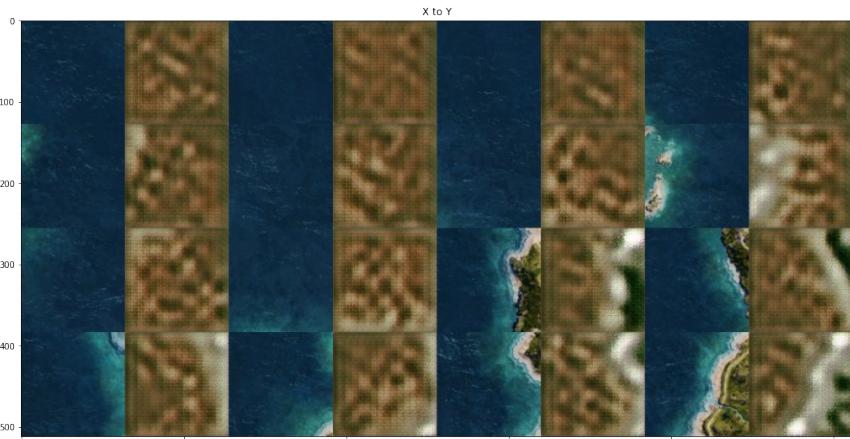
Sample #015

Dataset X: AC game map

Dataset Y: Bing Maps (phase 2 - seas & lands)

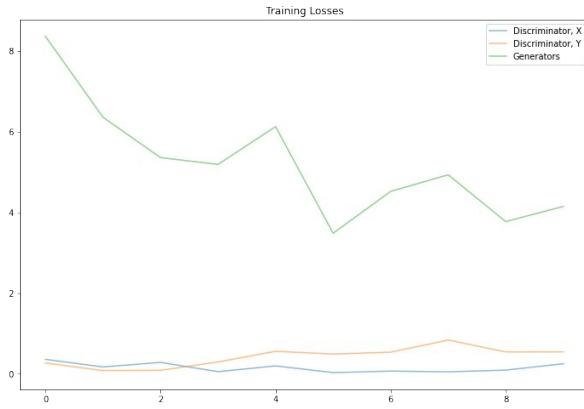
Image Size: **128*128**

Epoch: **200**



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Training & Generating Samples

Samples

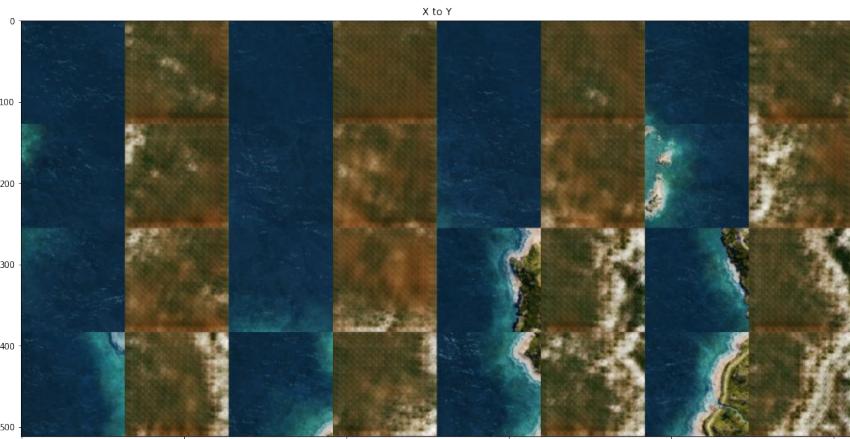
Sample #016

Dataset X: AC game map

Dataset Y: Bing Maps (phase 2 - seas & lands)

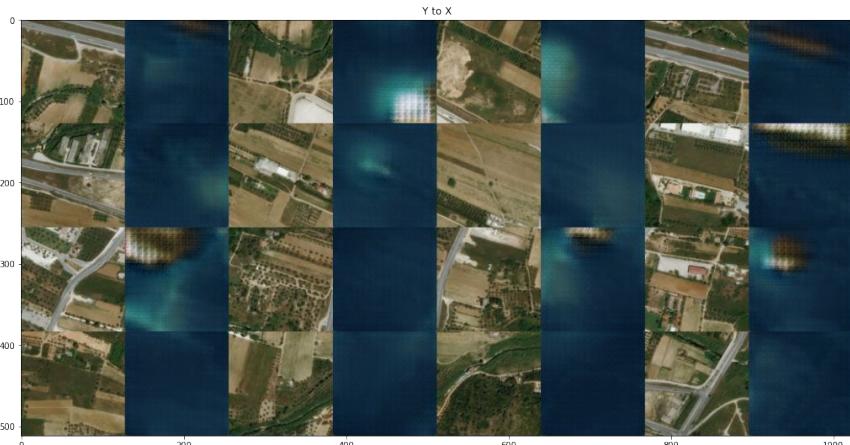
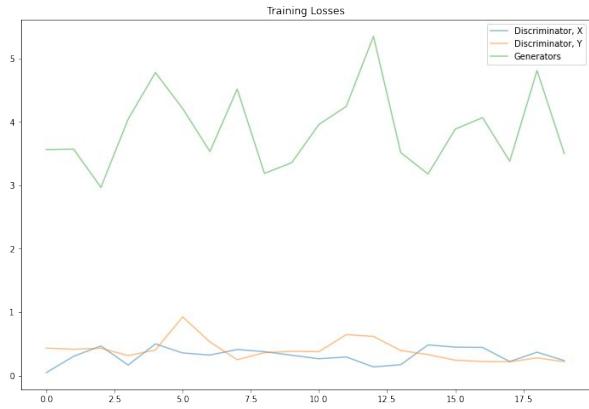
Image Size: 128*128

Epoch: 500



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Training & Generating Samples

Samples

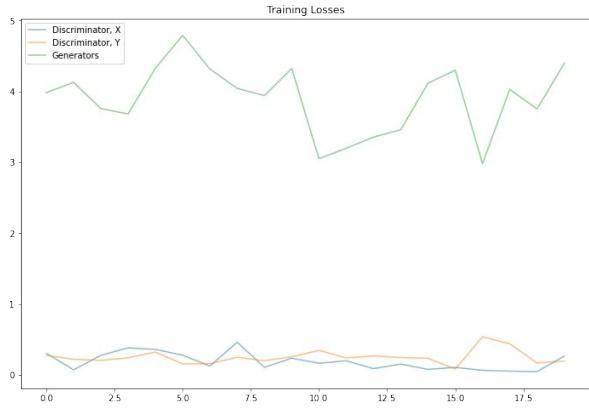
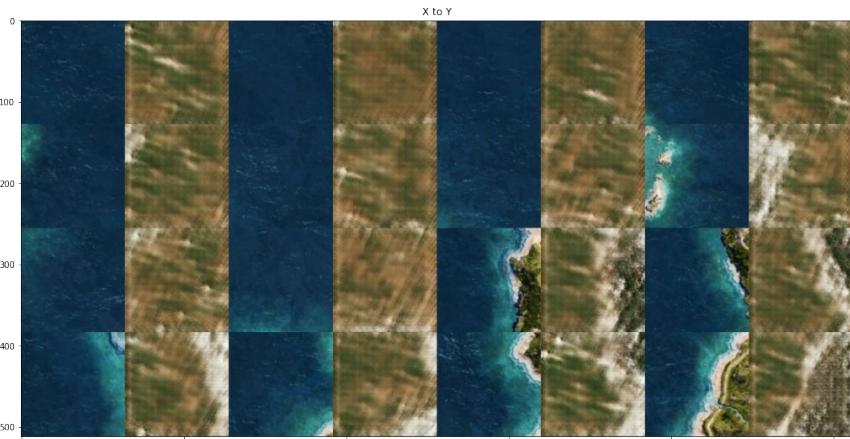
Sample #017

Dataset X: AC game map

Dataset Y: Bing Maps (phase 2 - seas & lands)

Image Size: 128*128

Epoch: 1000



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CycleGAN
 Game Map Generator

Training & Generating Samples

Samples

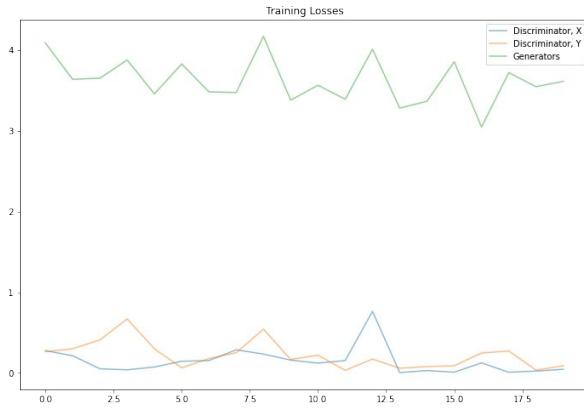
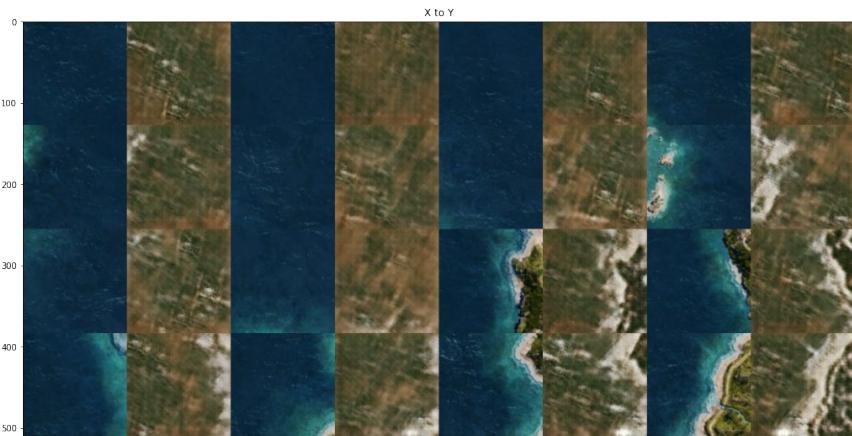
Sample #018

Dataset X: AC game map

Dataset Y: Bing Maps (phase 2 - seas & lands)

Image Size: 128*128

Epoch: 3000



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Training & Generating Samples

Samples

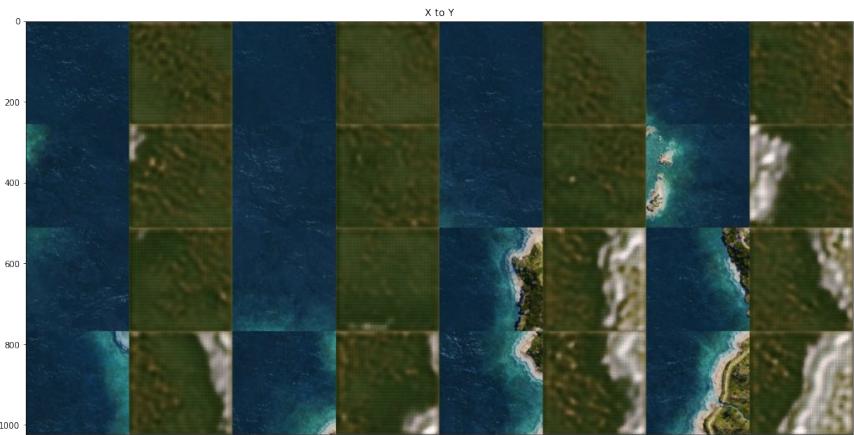
Sample #019

Dataset X: AC game map

Dataset Y: Bing Maps (phase 2 - seas & lands)

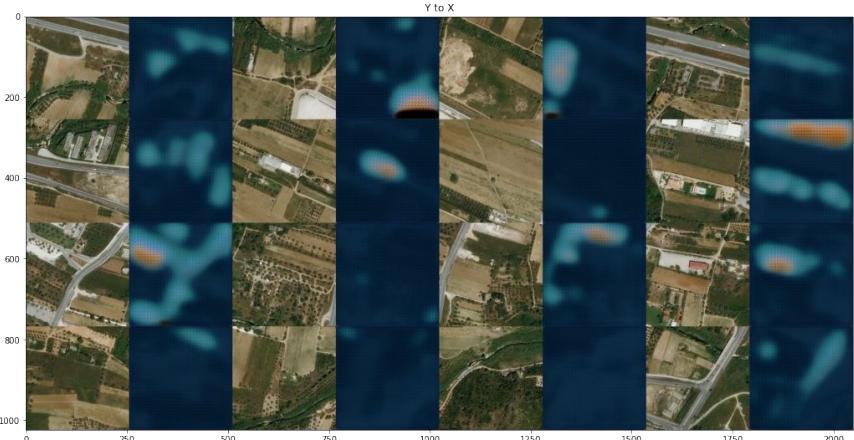
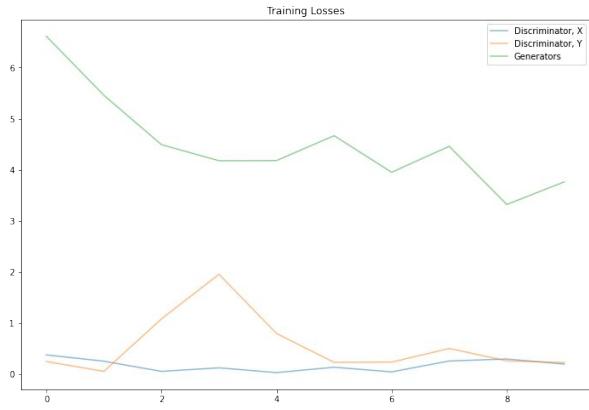
Image Size: 256*256

Epoch: 200



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Training & Generating Samples

Samples

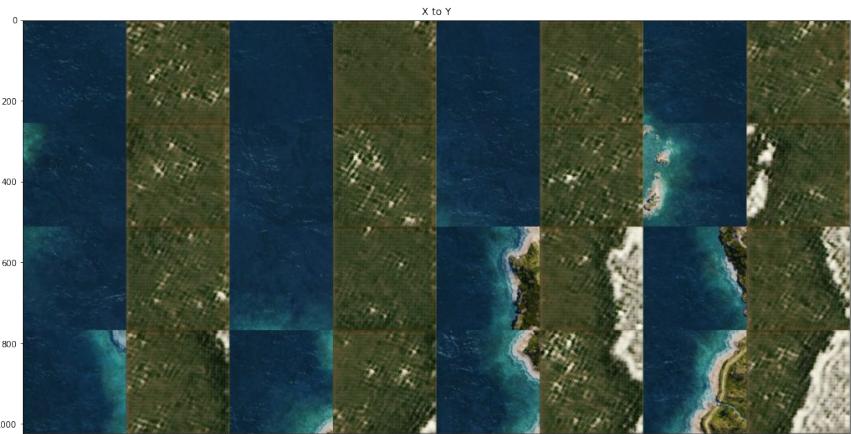
Sample #020

Dataset X: AC game map

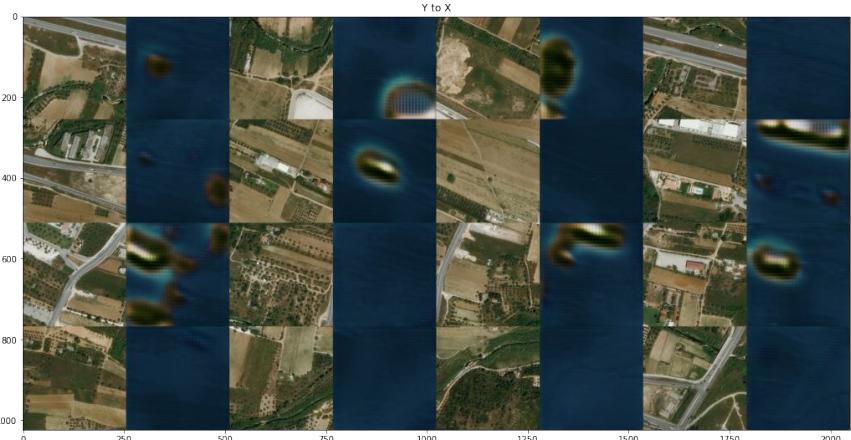
Dataset Y: Bing Maps (phase 2 - seas & lands)

Image Size: 256*256

Epoch: 500



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Training & Generating Samples

Samples

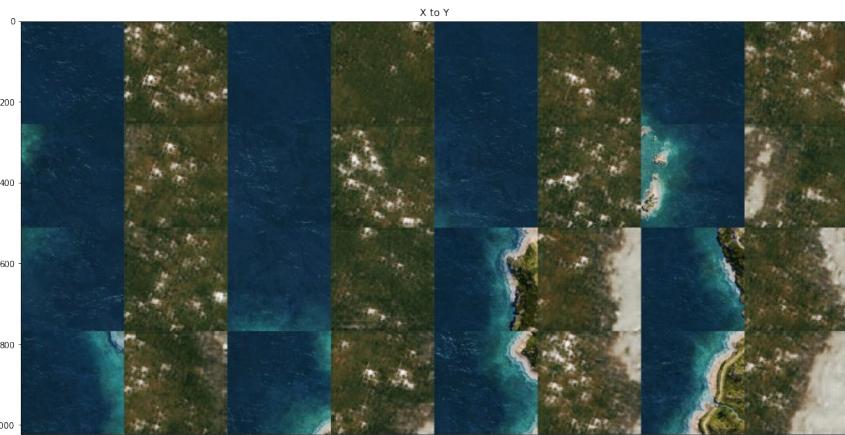
Sample #021

Dataset X: AC game map

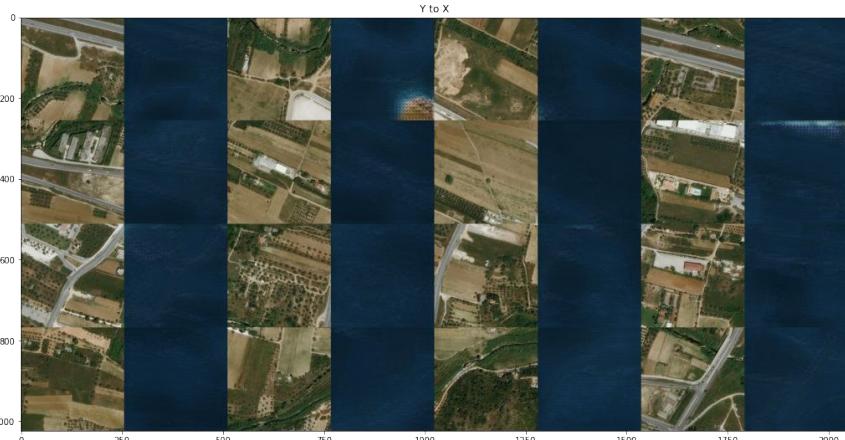
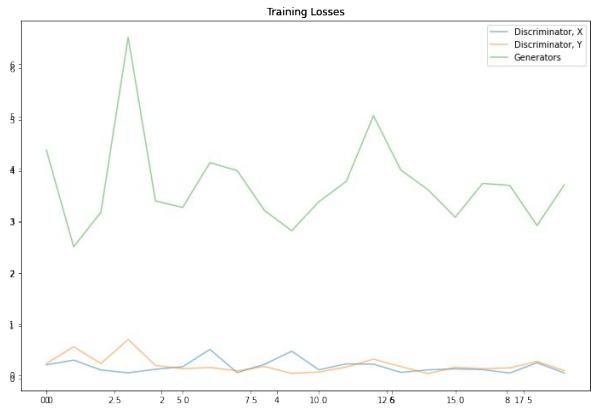
Dataset Y: Bing Maps (phase 2 - seas & lands)

Image Size: 256*256

Epoch: 1000



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CycleGAN
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Map Generation: Istanbul

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Map Generation: Istanbul

Historical Peninsula

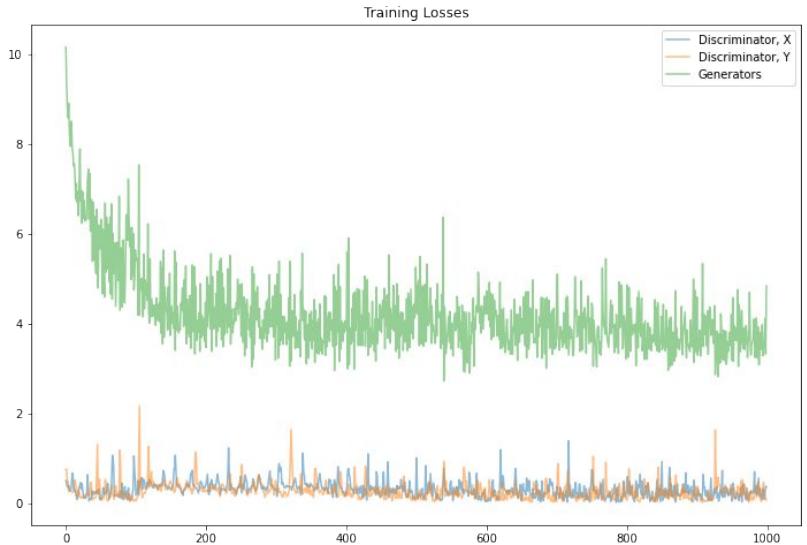
Dataset X: AC game map

Dataset Y: Bing Maps (phase 1 - mix)

Image Size: 128*128

Epoch: 1000

Image Placement: Manual



CycleGAN
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Map Generation: Istanbul

Historical Peninsula

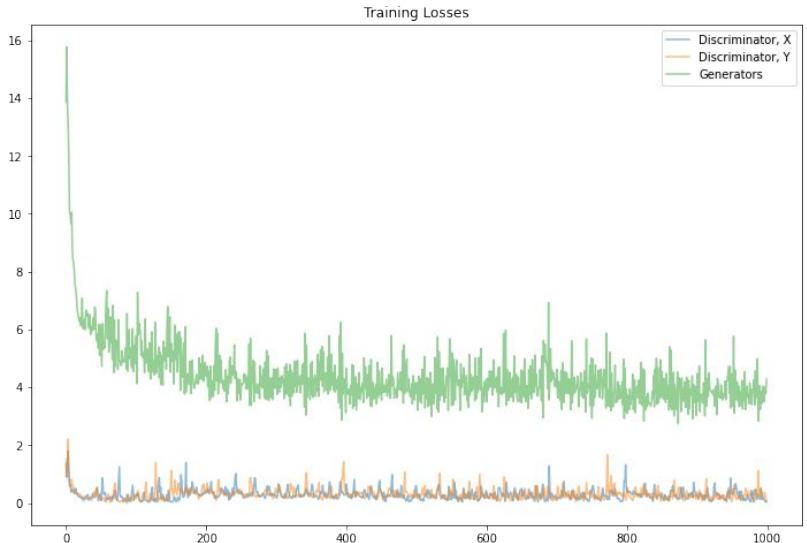
Dataset X: AC game map

Dataset Y: Bing Maps (phase 1 - mix)

Image Size: **192*192**

Epoch: 1000

Image Placement: Via script



CycleGAN
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Map Generation: Istanbul

Göksu

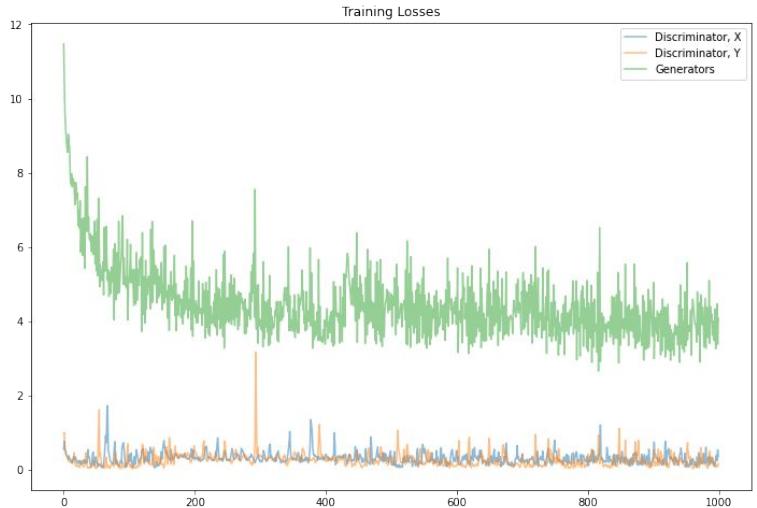
Dataset X: AC game map

Dataset Y: Bing Maps
(phase 1 - mix)

Image Size: 128*128

Epoch: 1000

Image Placement: Manual



Main objective of the study is to generate game maps from aerial photos by using open source code of Jun-Yan Zhu.

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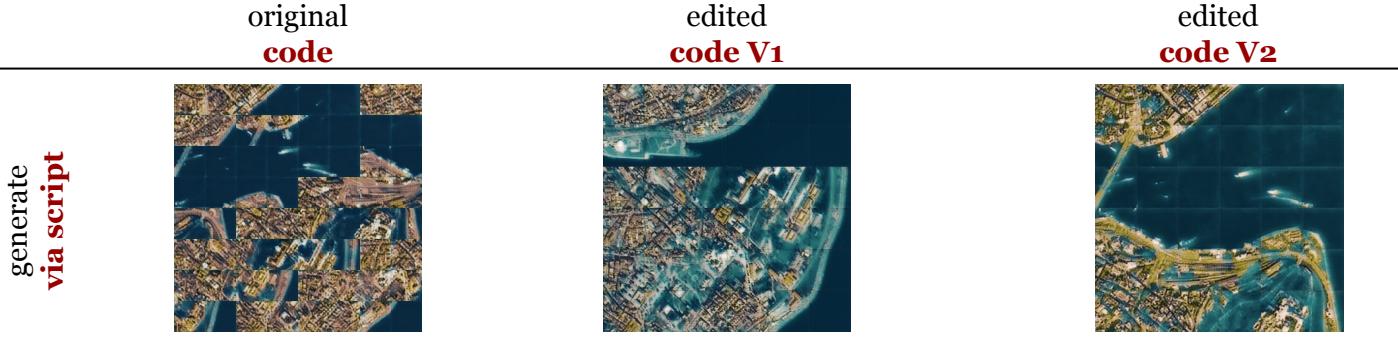


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Map Generation: Istanbul

Image Placement

CycleGAN Game Map Generator



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CycleGAN
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Conclusion

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Conclusion

Accomplishments:

- Training has been completed successfully.
- 3 different Dataset Y is used to see different results.
 - Best result is achieved with using Dataset Y 02 (only lands).
 - Least successful results are achieved with using Dataset Y 02 (seas & lands).
- Optimum value for epoch number is determined between 1000-2000 due to training loss graphs.

CycleGAN
Game Map Generator

Main objective of the study is to generate game maps from aerial photos by using open source code of Jun-Yan Zhu.

Future Objectives:

- Training with parted land & sea dataset.
- Map generating without re-learning.
 - Create other maps by creating a checkpoint and transferring learning.
- Training with other game maps.

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References

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References

Map of Assassins Creed Origins (Dataset X)

<https://mappenie.io/>

Google Maps (Dataset Y 01)

<https://www.google.com/maps>

Bing Maps (Dataset Y 02)

<https://www.bing.com/maps>

CycleGAN Code of Jun-Yan Zhu

<https://junyanz.github.io/CycleGAN/>

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Thank You

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