PLAYING WITH IMAGE-TO-IMAGE TRANSLATION WITH **CONDITIONAL ADVERSARIAL NETS**

CAS Machine Learning 2017

by Sebastian Mojado and “censor”

Image-to-Image Translation with Conditional Adversarial Networks

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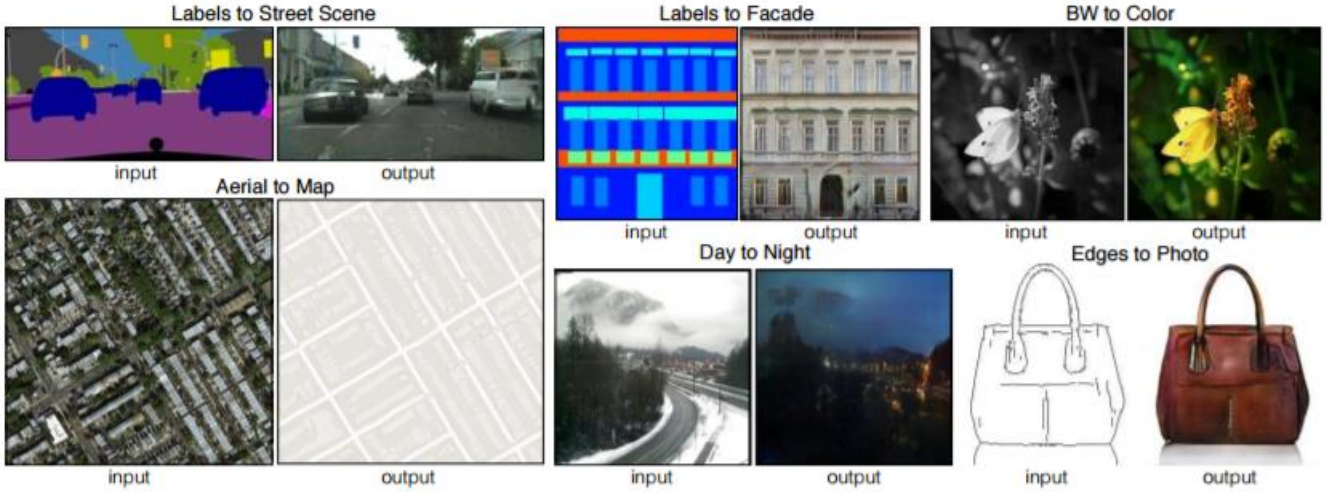


Figure 1: Many problems in image processing, graphics, and vision involve translating an input image into a corresponding output image. These problems are often treated with application-specific algorithms, even though the setting is always the same: map pixels to pixels. Conditional adversarial nets are a general purpose solution that appears to work well on a wide variety of these problems. Here we show results of the method on several. In each case we use the same architecture and objective, and simply train on different data.

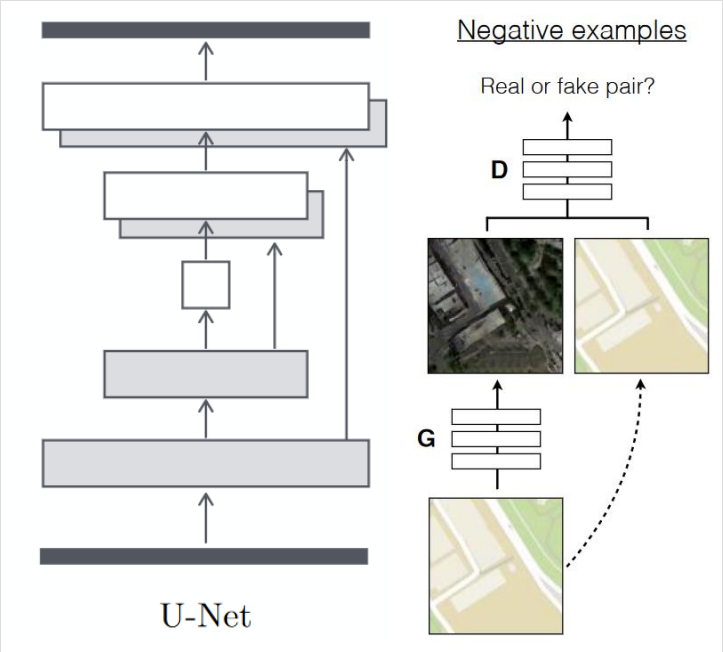
Abstract

We investigate conditional adversarial networks as a

may be expressed in either English or French, a scene may be rendered as an RGB image, a gradient field, an edge map, a semantic label map, etc. In analogy to automatic language

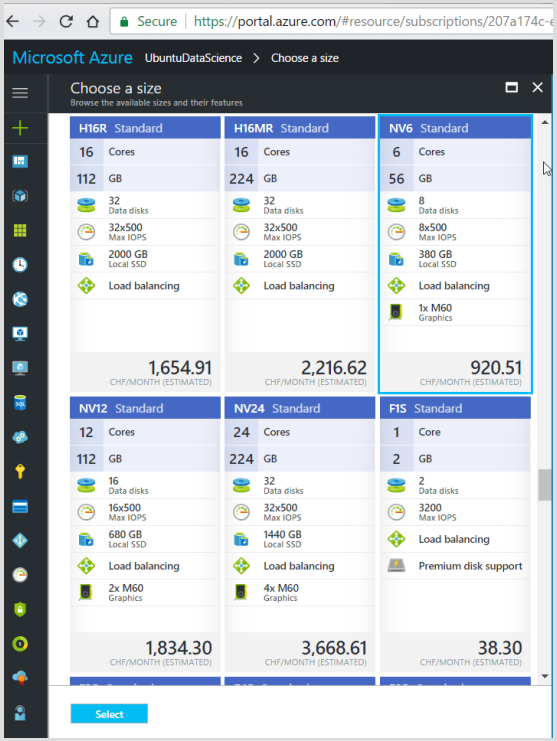
IMAGE-TO-IMAGE TRANSLATION WITH CONDITIONAL ADVERSARIAL NETS

- GAN:
  - Two networks are trained against each other
  - One network(G) generate out of a scratch an image,which looks real
  - Second network(D) discriminate the image, to decide real or fake
- Conditional AN vs GAN:
  - Both networks can look at "before" and "after" images
  - Positive and negative images are generated. D learns better.
  - => No different architecture/loss formulations



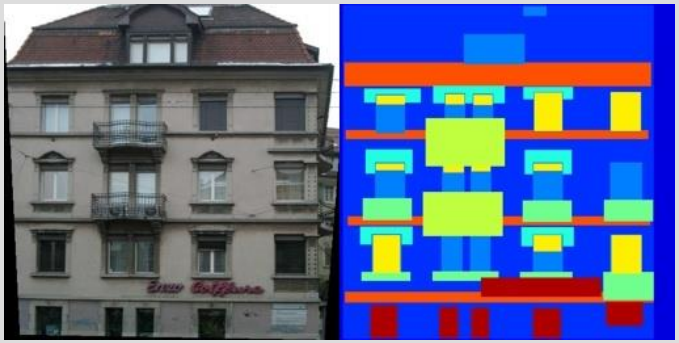
SETUP

- Ubuntu Virtual Machine on Microsoft Azure
- Projects on GitHub
- Docker environments
- Tensorflow (No Keras)
- Costs:
  - CHF 1.30/h (6 cores, M60, 56GB RAM)
  - CHF 0.02/h

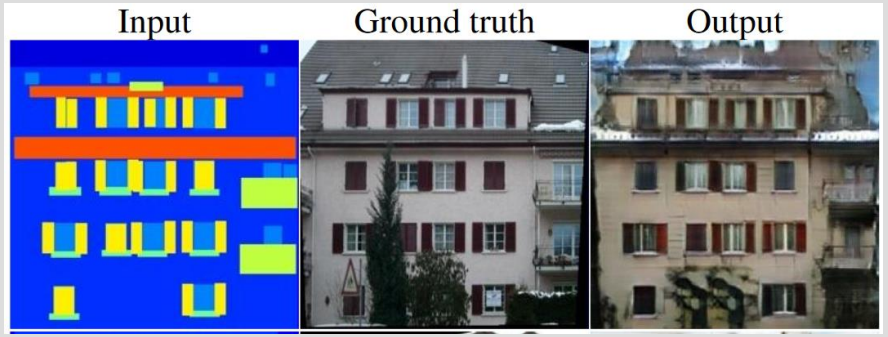


HOW TO GENERATE A FACADE

TRAINING

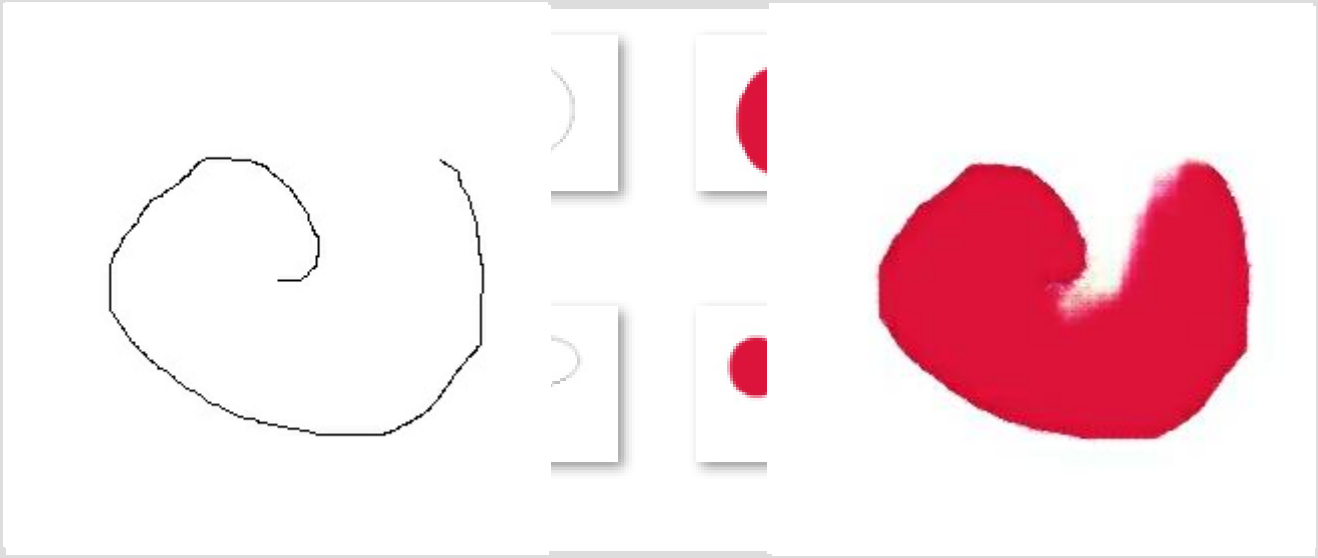


RESULT



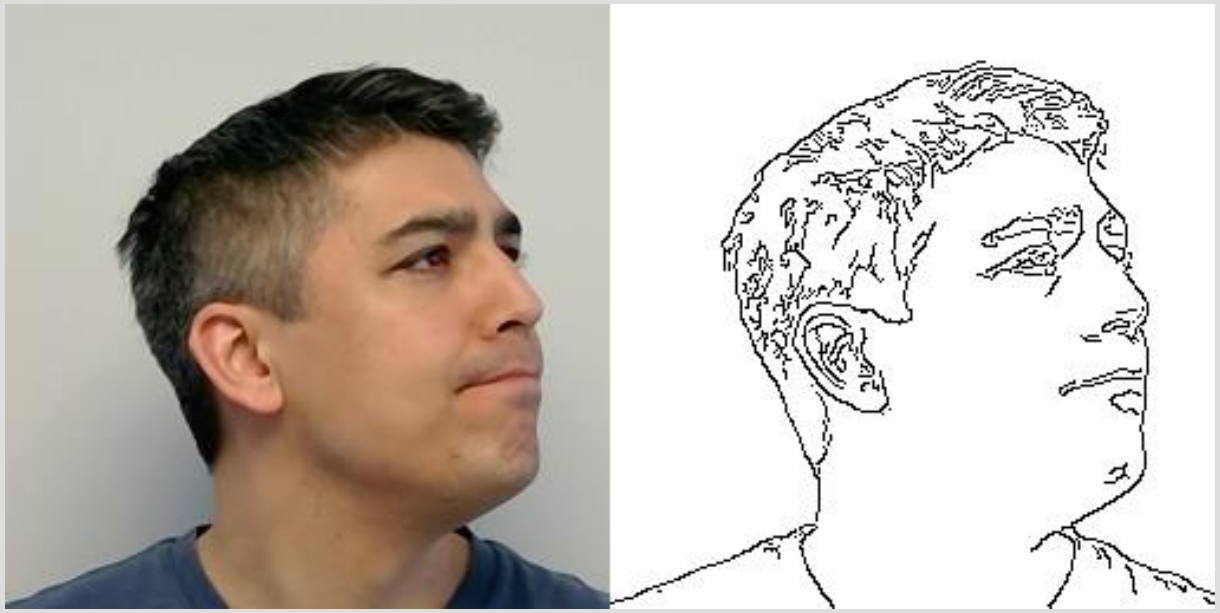
HOW TO FILL A SHAPE WITH RED

DRAWING TRAINING RESULT



THE MOJADO FACE DATASET

INPUT



THE MOJADO FACE DATASET

RESULT

THE MOJADO FACE DATASET

THANK YOU FOR YOUR ATTENTION!