GAN DISSECTION: VISUALIZING AND UNDERSTANDING GENERATIVE ADVERSARIAL NETWORKS

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THE PROBLEM

- Ever Imagined How GAN can give so realistic FAKE Images?.....
- To render a beautiful scene, What does a GAN need to know?
- And SOMETIMES....What causes the mistakes?

Restaurant

Living room

Church

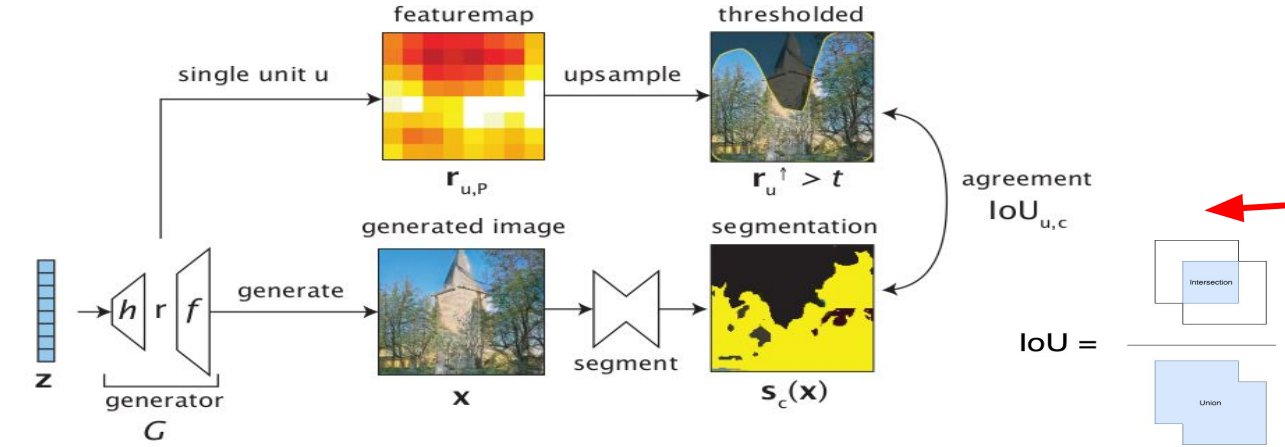
256x256 images synthesized by a Progressive GAN [Karras, et al 2017]

THE GOAL

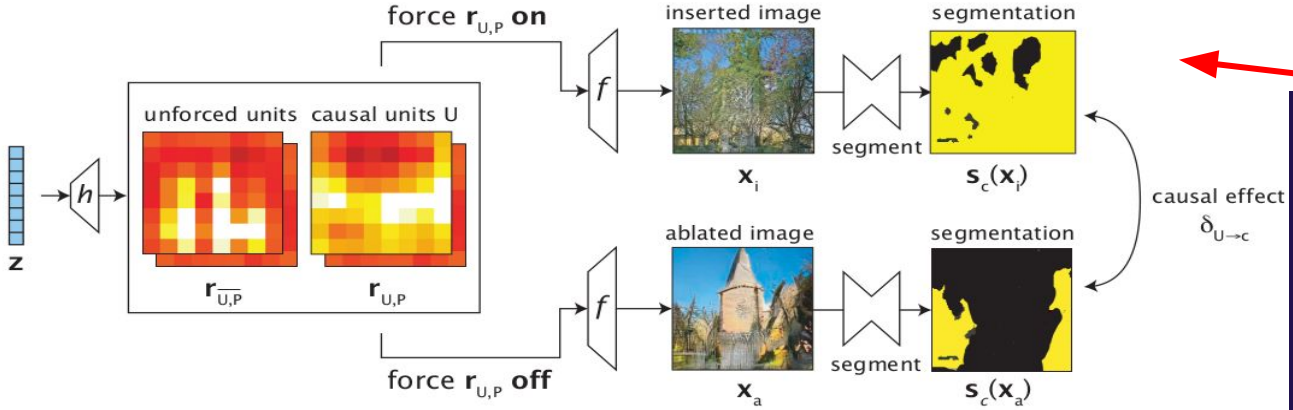
GOAL: **To analyze how objects** such as trees **are encoded by the internal representations** of a GAN generator

G: z → x.

Bedroom



How units correlate to an object class?



Measuring the relationship between representation units and trees in the output using INTERVENTION

GAN Dissection: ICLR 2019, David, Hendri, Bolie

RESULTS

Units in layer

Unit class distribution

layer1
512 units total

0 object units
2 part units
0 material units

ceiling-t layer1 #457 iou=0.10

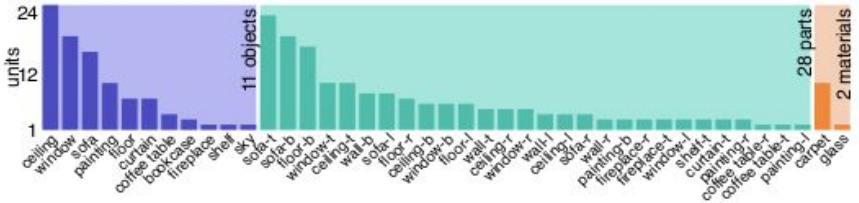
ceiling-t layer1 #194 iou=0.07

layer4
512 units total

86 object units
149 part units
10 material units

sofa layer4 #37 iou=0.28

fireplace layer4 #23 iou=0.15

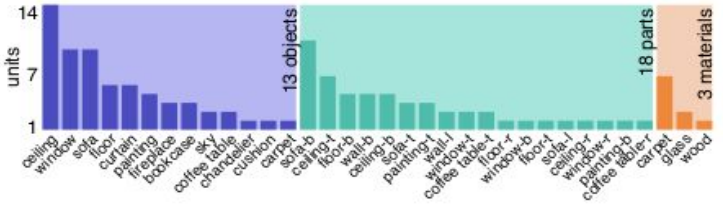


layer7
256 units total

59 object units
48 part units
9 material units

painting layer7 #15 iou=0.23

coffee table-t #247 iou=0.07

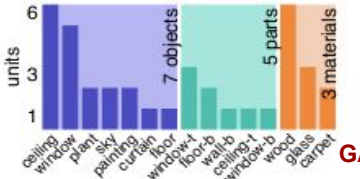


layer10
128 units total

19 object units
8 part units
11 material units

carpet layer10 #53 iou=0.14

glass layer10 #126 iou=0.21



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