

# Cobbles & Halvin

**Group 5**

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# Concept

Create Calvin & Hobbes like comic strips using machine learning. Inspired by the neural yorker. The project consists of image-and-caption combinations produced by a generative adversarial network (GAN), deep-learning-based model. The network is trained using a database of punchlines and images of cartoons found online and then “learns” to create new gags in the New Yorker’s iconic style, with hilarious (and sometimes unsettling) results



# Process: Text

- Used GPT-2 Model to generate text results
- Trained on large dataset of Calvin & Hobbes quotes
  - Around 500 epochs
- Generated sample outputs unconditionally

```
19851117      Calvin and Hobbes November 18 It starts all over
again!
19851118      So long Pop! I'm off to check my tiger trap! I rigged
a tuna fish sandwich yesterday, so I'm sure to have a tiger by now!
They like tuna fish, huh? Tigers will do anything for a tuna fish
sandwich. We're kind of stupid that way. Munch Munch
19851119      So Dad, what do I do when I catch a tiger? Bring it
home and stuff it Calvin! Can't you see I'm busy? Sheesh. No, really,
I couldn't eat another bite!
19851120      What's all this noise? You're supposed to be asleep!
It was Hobbes, Dad! He was jumping on the bed! Honest! "Hobbes" was
not jumping on the bed! Now go to sleep! You were too jumping on the
bed! Well, you were the one playing the cymbals!!
19851121      Show and tell is over, Calvin. Please put your
"tiger" in your locker. In my locker?! He'll suffocate! Well, at
least put him under your chair. Whey! That was a close one! I'll say!
Sever plus three. Seventy-three.
19851122      Good night, Calvin. 'night Dad! Hey! Aren't you going
to say good night to Hobbes?! Good night, Hobbes. That's it?! No
story? No smooch?? Go to sleep, you sissy.
19851123      What's this? Taste it. You'll love it. You know
you'll hate something when they won't tell you what it is.
19851124      Outrage! Why should I go to bed? I'm not tired! It's
only 7:30! This is tyranny! I'm ZZZZ Good night, Calvin. Will you
check for monsters under the bed? No monsters. You're safe. What
about the dresser? Calvin, I'm sure there are no monsters in your
dresser. Go to sleep. Great. I'll bet that's where they all are.
They'll come out and kill us as soon as we fall asleep. So who's
going to fall asleep? Well, we'll just have to get the monsters
first. You irritate them with this horn, and I'll nail 'em with my
dart gun when they come out. Get ready! I hear one coming! What's all
the noise?! AAIEEEE!! A monster in the hallway!! Dear will you come up
here a minute? I think I wounded him. Give me the bat and I'll finish
him off!
19851125      Any monsters under my bed tonight!! Well there'd
better not be! I'd hate to have to torch one with my flame thrower!
You have a flame thrower?? They lie. I lie.
```

## ***Process: Text***

- Many samples incoherent/inappropriate
  - Ex: Calvin, don't try to tell me I'm ugly. I'm ugly, no way. I'm not looking for love either! I can't stand reproduction! What's wrong with neatness?
  - Ex: Fresh out of college, I'm looking for some good old-fashioned nudism. Exactly what is "insulting"? What is "it?"
- Had to manually curate samples that were interesting/funny
  - Ex: I know Mom was unhappy with what happened with her boyfriend, and that's why he still couldn't get over it. I heard the other day someone hit him in the face with a baseball bat, so I'd say, "I know what happened to Dad," and then he'd go to bat again. I don't know what it was after all.

# ***Process: Image***

## VQGAN+Clip vs. Style Transfer

### **VQGAN+Clip:**

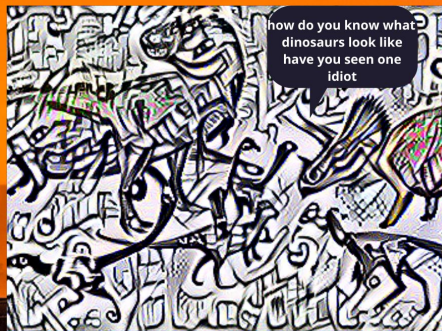
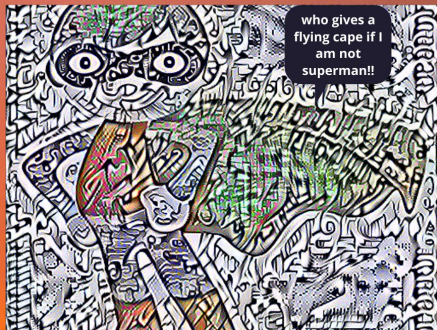
- input: segment of dialogue produced by the GPT2 model
- produces images with distinct shapes and good quality
- images were mostly abstract but still reflected the main subject of the text input.

### **Style Transfer:**

- Find images which match the text generated using GPT-2
- Use comic styles to superimpose style transfer on the images
- Use fast style transfer with TF-Hub
- Extract style and content tensors
- Re run TF-Hub

# Style Transfer

## Dinosaur more like a giraffe!!



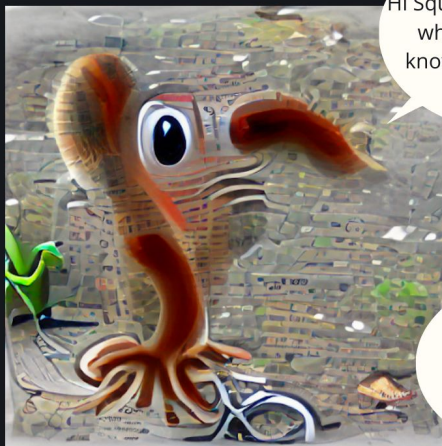
The style transfer superimposes comic style but makes the images slightly incoherent

## ***Judging our Results***

We had a few criteria on what we thought was a good result:

- Text was mostly coherent and interesting/funny
- Image fit the theme of the associated text
- Images were mostly consistent in style throughout the comic strip
- Images were visually striking/appealing

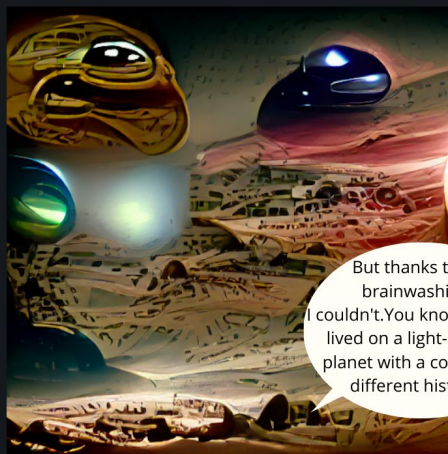
# Results



Hi Squiff, it turns out that who-knows-where knows who you really are!



When I lived on a light-adapted planet with a completely different history, I wanted to be recognizable as a human being.



But thanks to my brainwashing, I couldn't. You know, "When I lived on a light-adapted planet with a completely different history".



That's the way things work around here. Man - what a wonderful world!

Hey Dad, it's  
your fault  
that you're  
getting wet.



What do you  
know about the  
water coming  
out of your butt?



It doesn't  
have to be  
bad.



It just  
has to be  
natural.



# GRANDMA'S TIGER



Dad, lets go.



OK,  
grandmother  
milked a 50  
lb. tiger.



One eyeball,  
one eye and  
one  
smile.



All my  
happiness's  
come from a  
tiger!



Another eyeball,  
another eye and  
a smile! Very  
good.



# Reflection

- For the most part, our results fit our criteria
  - Images were unique and appealing, containing certain distinguishing characteristics
  - Text results were entertaining and images mostly stuck to the theme of the associated text
- We had some issues with maintaining consistency in the image style throughout the comic strip
  - Further extensions of this project could address this issue: ex. preserve z-vector latent space from previous image in the strip as starting point for next image

