**OpenAIKnowledge**

pr3 - OAK Logo

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# OVERVIEW

Develop TF code and use AI Models and Datasets necessary to generate image for OAK logo:

* Use images from brand logos in Internet
* Use images from 2001 a space odyssey (film)
* Use models of image generation: DCGAN, StyledGAN, CVAE, ...

# GOALS

* Generate OAK logo

# SPECIFICATIONS

* Repository: [https://github.com/openaiknowledge/pr3](https://github.com/openaiknowledge/PR2)

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# MILESTONES

## Look at the big picture

* Chapter 17. Representation Learning and Generative Learning Using Autoencoders and GANs. Géron, Aurélien. Hands-On Machine Learning with Scikit-Learn, Keras, and TensorFlow (p. 567). O'Reilly Media. Edición de Kindle.
* NIPS 2016 Tutorial: Generative Adversarial Networks (<https://arxiv.org/abs/1701.00160>)
* <https://github.com/ageron/handson-ml2/blob/master/17_autoencoders_and_gans.ipynb>
* <https://machinelearningmastery.com/category/generative-adversarial-networks/>, <https://machinelearningmastery.com/generative_adversarial_networks/>, https://machinelearningmastery.com/how-to-develop-a-conditional-generative-adversarial-network-from-scratch/
* <https://github.com/runwayml/Intro-Synthetic-Media>
* <https://github.com/adityabingi/DCGAN-TF2.0>
* [images.ipynb - Colaboratory](https://colab.research.google.com/github/tensorflow/docs/blob/master/site/en/tutorials/load_data/images.ipynb#scrollTo=crs7ZjEp60Ot)
* <https://www.kaggle.com/siddhrath/rgb-face-gan>

## 

## Get the data

## Explore, prepare the data

Images:

* **2001**: images of *2001 a space odyssey* extracted from internet
  + drive // openaiknowledge/pr3/data/1/images/space
* **logos**:
  + <https://github.com/msn199959/Logo-2k-plus-Dataset>
    - <https://drive.google.com/open?id=1PTA24UTZcsnzXPN1gmV0_lRg3lMHqwp6>

## 

## Study models, select a model and train it.

Study models:

* DCGAN, StyledGAN, CVAE, Conditional GAN, ...

Generate sketches:

* Sketch1
  + dataset logos
  + HAL logo+ images of *2001*
* Sketch2:
  + dataset logos: only lines
  + colored by Style transfer of images of *2001*
* Sketch3:
  + dataset logos + HAL logo: only lines
  + colored by Style transfer of images of *2001*
* Sketch4:
  + HAL logo: augmentation strategy for generate HAL logo images
  + HAL logo: only lines
  + colored by Style transfer of HAL logo
* Sketch5:
  + logos IBM, Google,...: ground truth IBM, Google
    - data augmentation of logos
  + HAL logo
  + images of *2001:* style
* Sketch6:
  + generate “lines image” from HAL logo
  + generate new image based on VAC
  + “lines image logo”+styled colors from 2001 images

# Sketch4

Extract edge from hal image:

* code/pr3\_edge\_detection.ipynb
  + generate logo edge
* pr3-cvae.ipynb
  + generate logo lines
  + hal\_cvae.png
* pr3\_style\_transfer.ipynb
  + from hal\_cvae.png + space\_odyssey\_11.jpeg
  + <https://tfhub.dev/google/magenta/arbitrary-image-stylization-v1-256/2>
  + we generate logo in any size
* pr3-dcgan.ipynb (not used it)
  + test to generate logo edges with dcgan

Models:

* DCGAN:
  + [Deep Convolutional Generative Adversarial Network](https://www.tensorflow.org/tutorials/generative/dcgan)
* CVAE:
  + <https://www.tensorflow.org/tutorials/generative/cvae>
* StyledGAN:
  + <https://www.tensorflow.org/tutorials/generative/style_transfer>

## Fine-tune your model and save it

## Present your solution

Logos generated:

* logo\_128x128.png,
* logo\_256x256.png
* logo\_512x512.png
* logo\_1024x1024.png

## Launch, monitor, and maintain your system

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# NOTES