ALPhA Week 4

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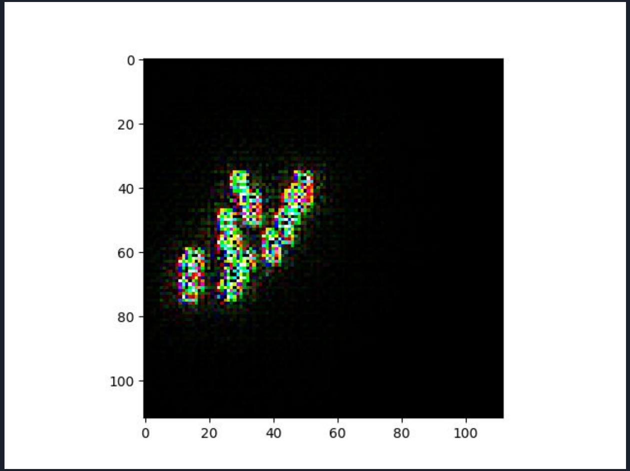
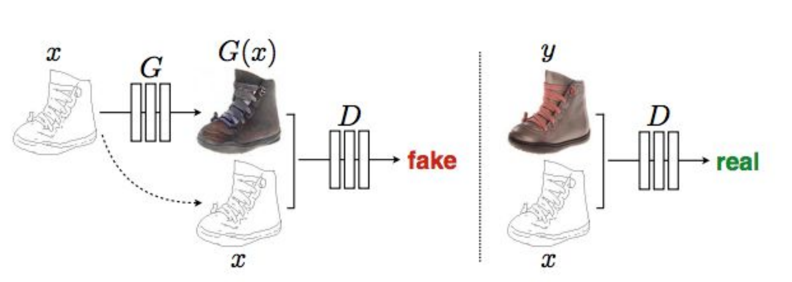
Summary of the last week

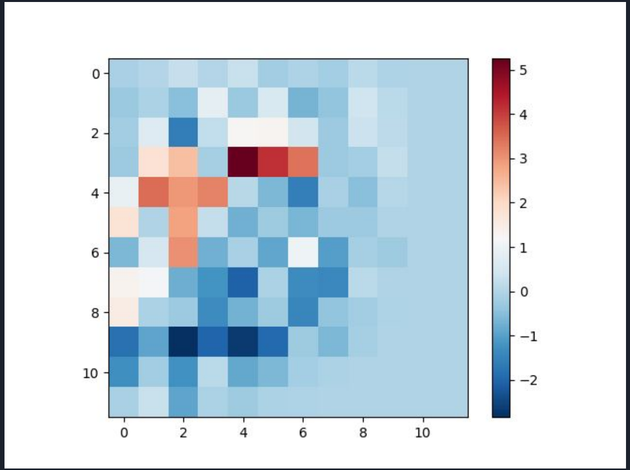
- Implemented Pix2Pix with our data
- Worked on building a CNN from the ground up to train from scratch.
- Found a typo

Pix2Pix

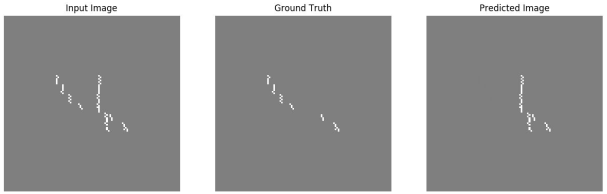
- Two networks competing (Generator and Discriminator)





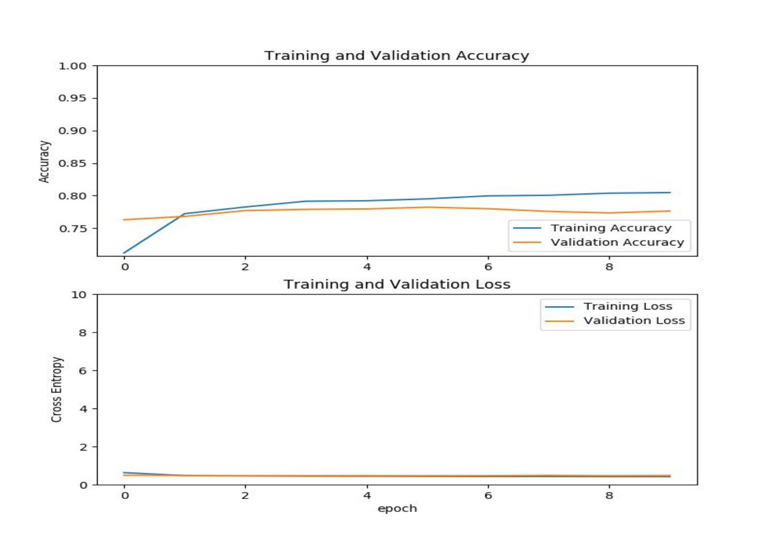


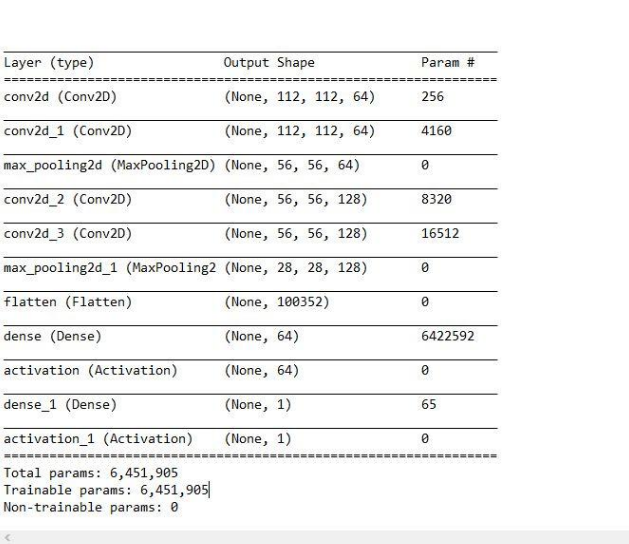
Pix2Pix Results



CNN from Scratch

- After finding that our results were around 50%, we decided to make a small scratch made CNN modeled after our VGG16 pretrained model
- The scratch made model would only have up to the second pooling layer

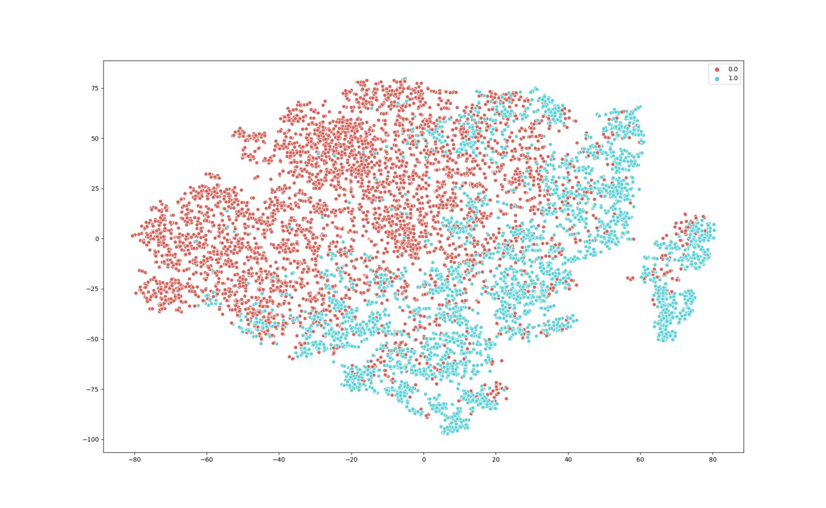


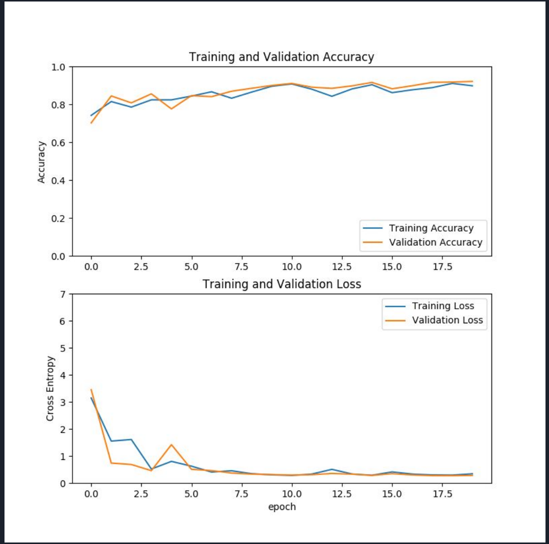


```
Layer (type)                 Output Shape              Param #
=================================================================
conv2d (Conv2D)              (None, 112, 112, 64)      256
_________________________________________________________________
conv2d_1 (Conv2D)            (None, 112, 112, 64)      4160
_________________________________________________________________
max_pooling2d (MaxPooling2D) (None, 56, 56, 64)        0
_________________________________________________________________
conv2d_2 (Conv2D)            (None, 56, 56, 128)       8320
_________________________________________________________________
conv2d_3 (Conv2D)            (None, 56, 56, 128)       16512
_________________________________________________________________
max_pooling2d_1 (MaxPooling2 (None, 28, 28, 128)       0
_________________________________________________________________
flatten (Flatten)            (None, 100352)            0
_________________________________________________________________
dense (Dense)                (None, 64)                6422592
_________________________________________________________________
activation (Activation)      (None, 64)                0
_________________________________________________________________
dense_1 (Dense)              (None, 1)                 65
_________________________________________________________________
activation_1 (Activation)    (None, 1)                 0
=================================================================
Total params: 6,451,905
Trainable params: 6,451,905
Non-trainable params: 0
```

So about that typo...

- Accidentally gave the script the same dataset twice
- Fixed it
  - When training the entire model we reached 92% accuracy
  - Logistic regression accuracy: 89%





Typo Aftermath

- 92% accuracy is fun and all but Pix2Pix seems more applicable
  - No need to generate various projections of possible data

Goals for this week

- Meet with Gagik (discuss which method we prefer)
- Progress and fine tune Pix2Pix implementation
    - PatchGAN vs PixelGAN