D94 Week 5 Update

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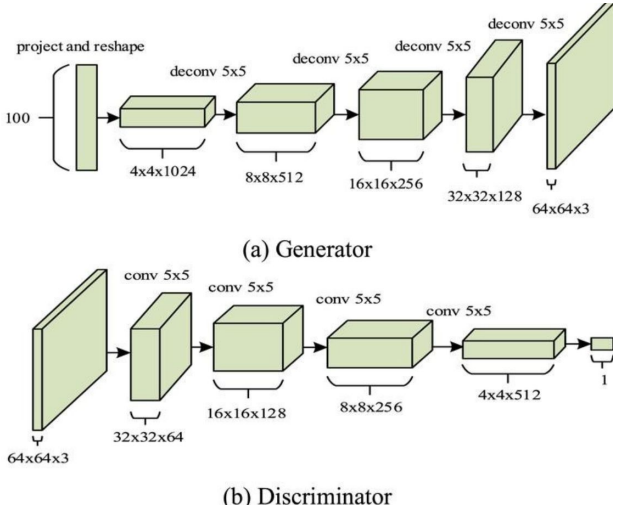
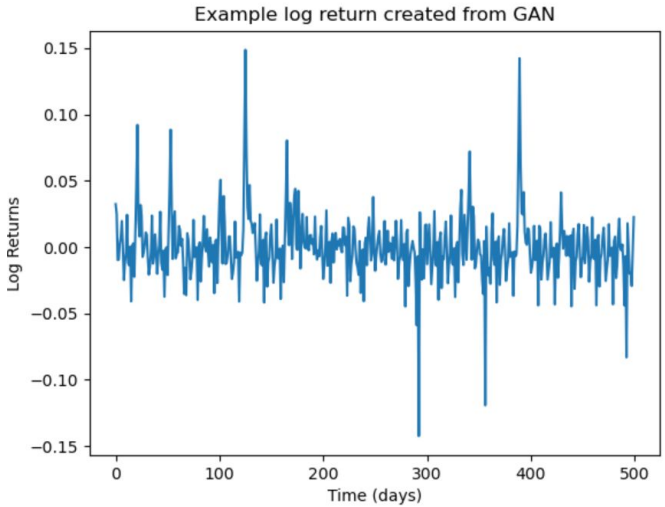
Completed Tasks

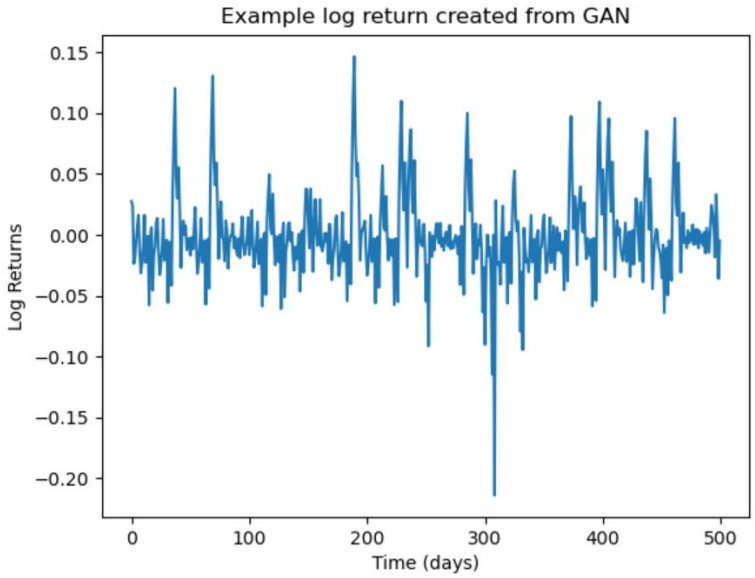
- Built a working DC-GAN
  - Experimented with 500 day generation and 2433 day generation (10 years)
  - Note: For the 500 day generation, a random 500 day interval was chosen from each recording every time the dataloader was called.

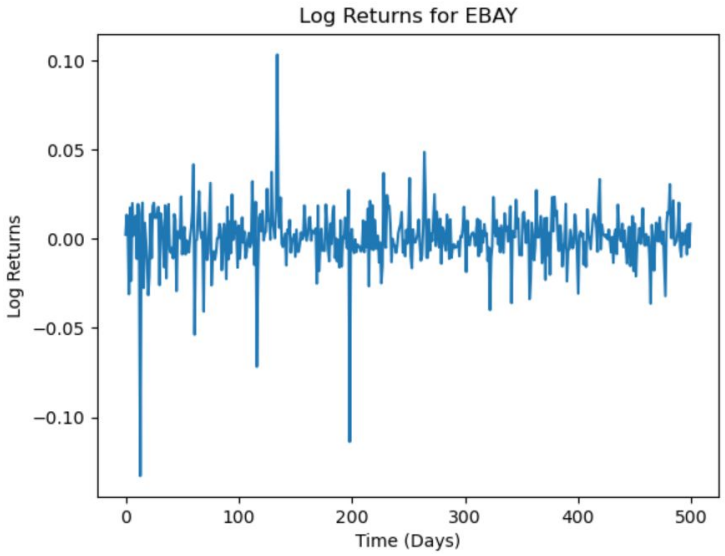


https://thesequence.substack.com/p/edge171



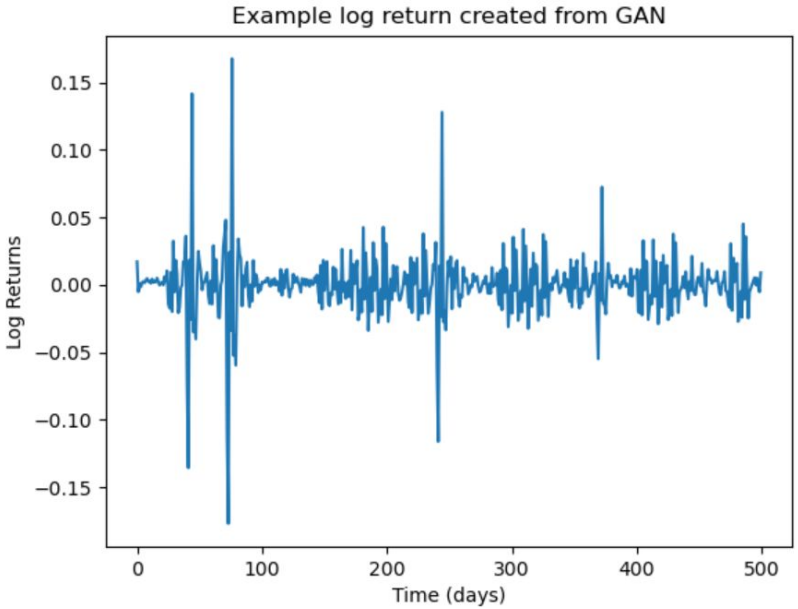
500 Day Generation

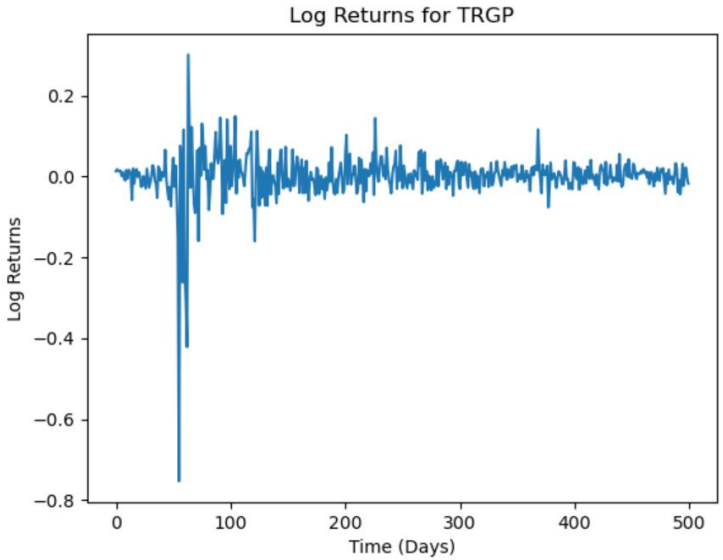




Epoch 89

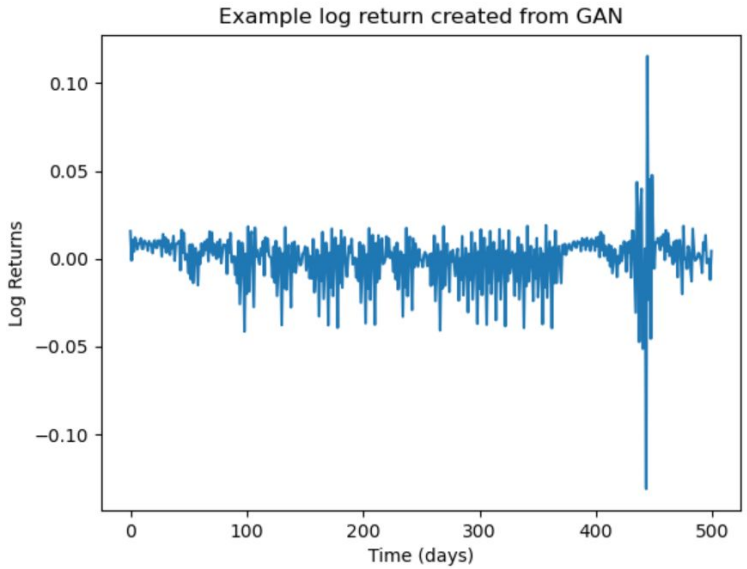
500 Day Generation



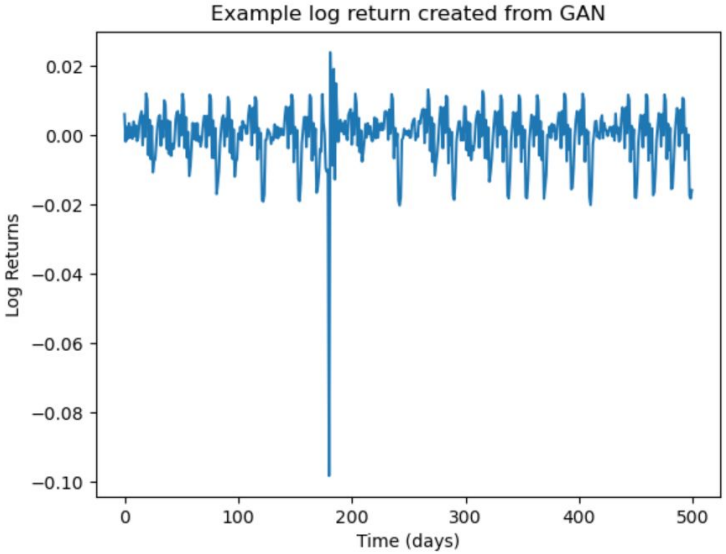


Epoch 63

Problem: Some Generated Data is too Pattern-Like to Look Real

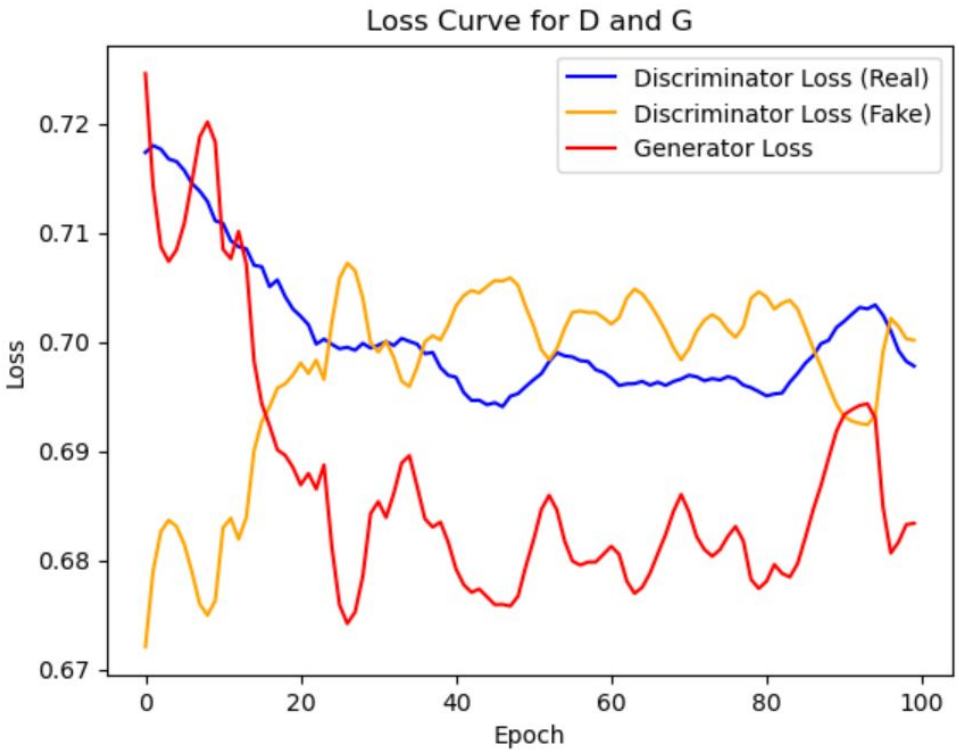


Epoch 74

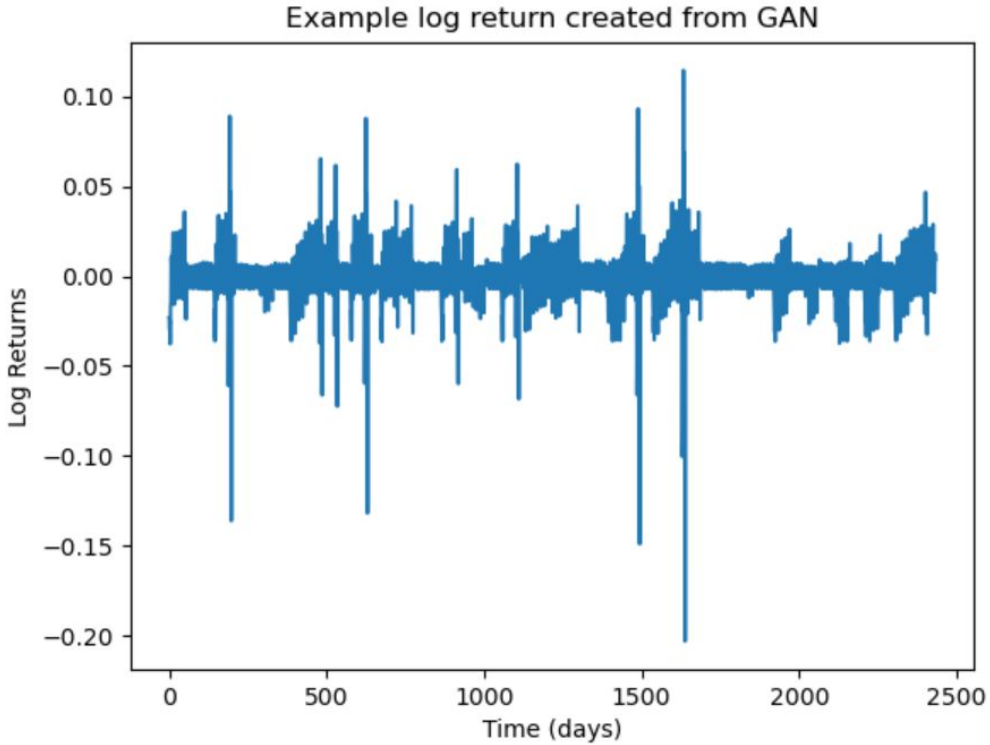


Epoch 98

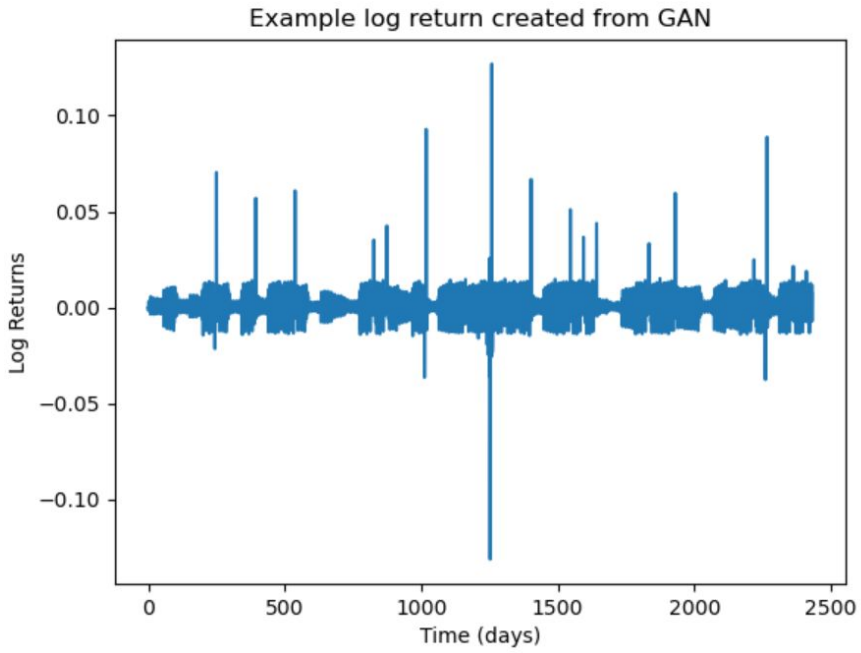
Loss Curve for 500 Day Generation

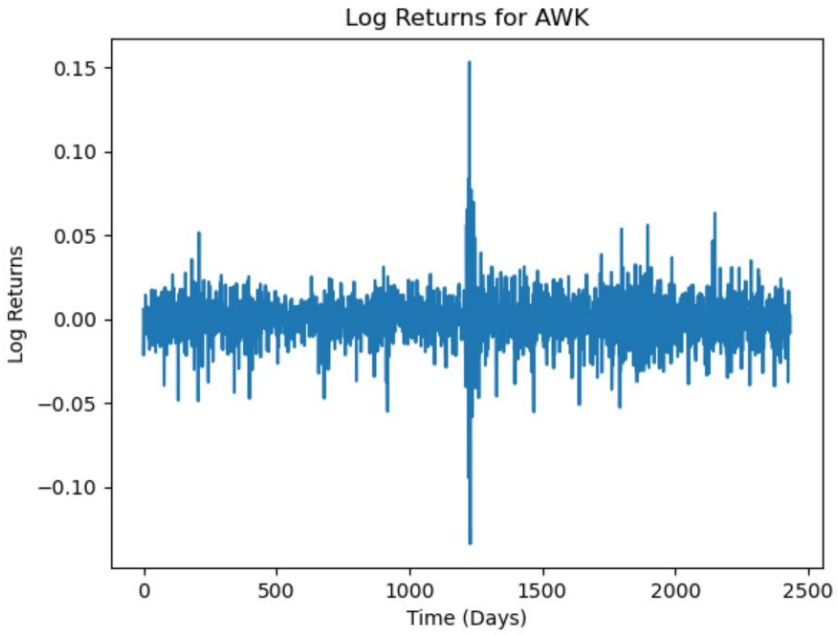


10 Year Generation

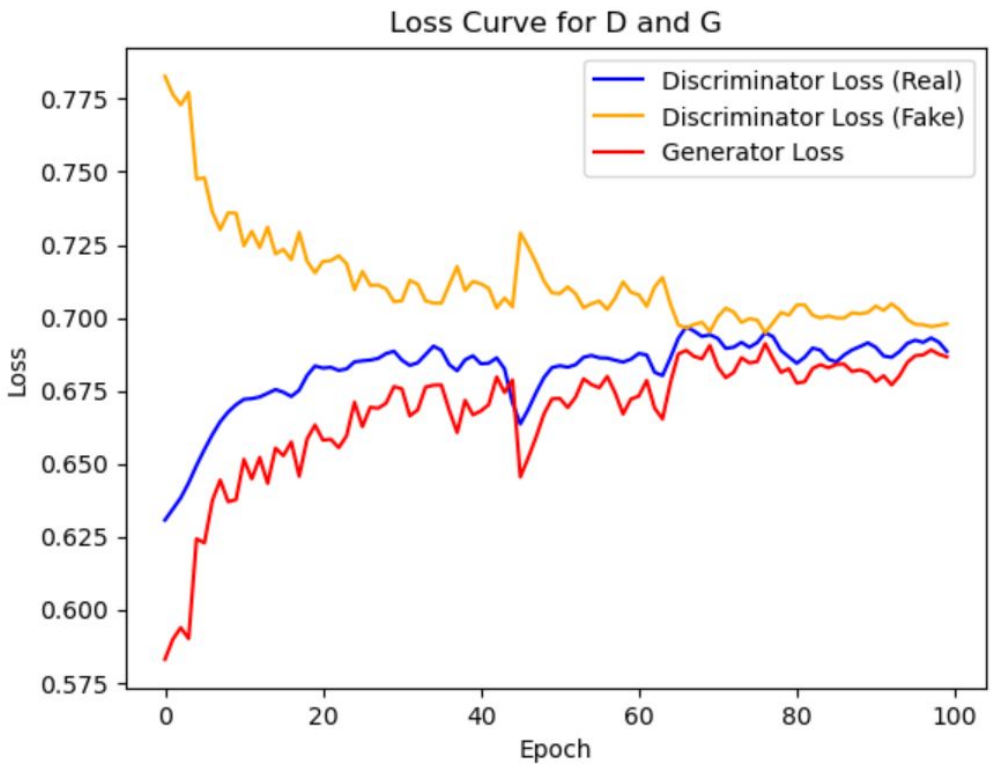


10 Year Generation





10 Year Generation Loss



Problems and Questions

- Typically, the critic needs more updates than the generator, but in my case if the learning rate for the critic is high, then the generator loss consistently goes up.
- For a Vanilla/DC-GAN, what would be the model selection metric?

Things to Experiment With Moving Forward

- Scale log returns to [-1,1] to align with the tanh activation at the end of my generator.
  - Currently I scale my tanh output by 0.2 (most log returns fall within the range of -0.2 and 0.2)
- Possibly add other loss criteria for the generator like matching the stdev of the real data or having a 0 mean.
  - Currently I need to subtract the fake data by its mean to ensure a mean ~0, otherwise it typically ends up being below 0.
- Experiment with how many times I train the critic vs the generator
- Implement W-GAN