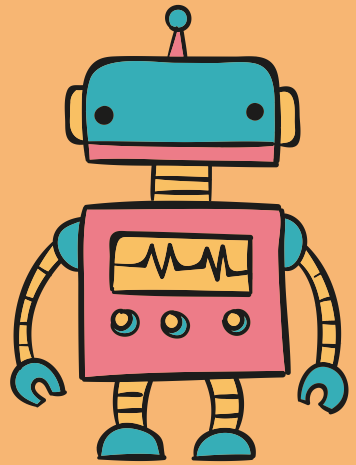
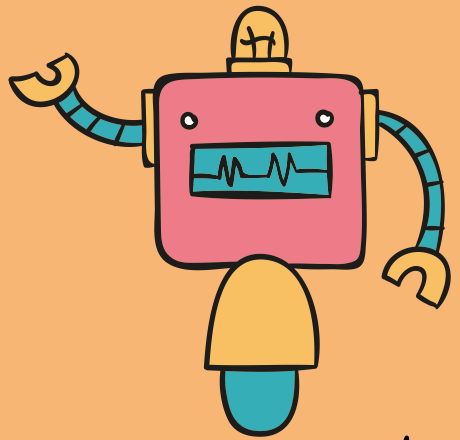
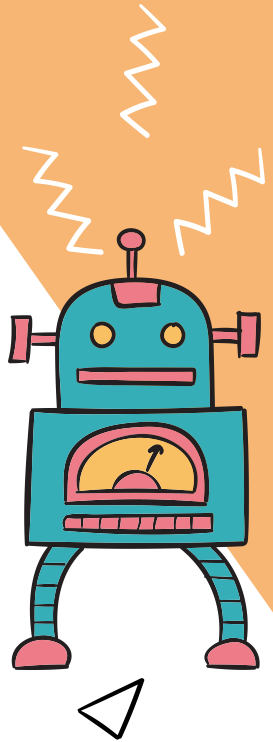
NFT Appraisal with CNN





By Zher Min (Y3 EE)



01 Motivation

How did I come up with this idea?

02 Execution Flow

What was my plan?

03 Analysis

What went wrong? And the problems with NFT prices.

04 Improvements

What could I have done instead?

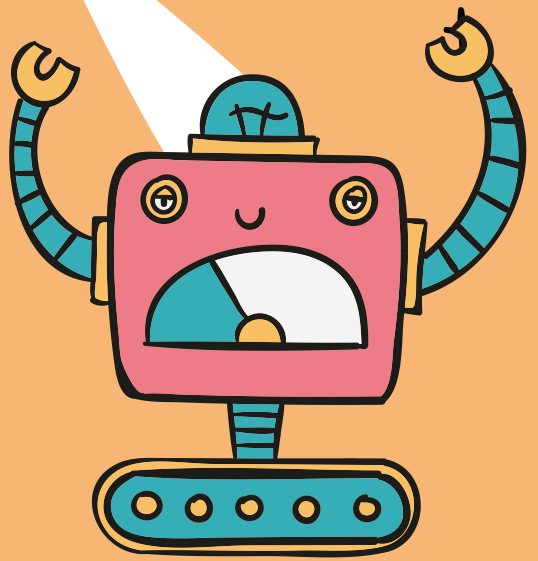
TLDR

This was a project that failed, ie. the results don't make sense (0% acc).

However, I still had a lot of takeaways in project ideation and execution.

01

Motivation



How did I come up with this idea?

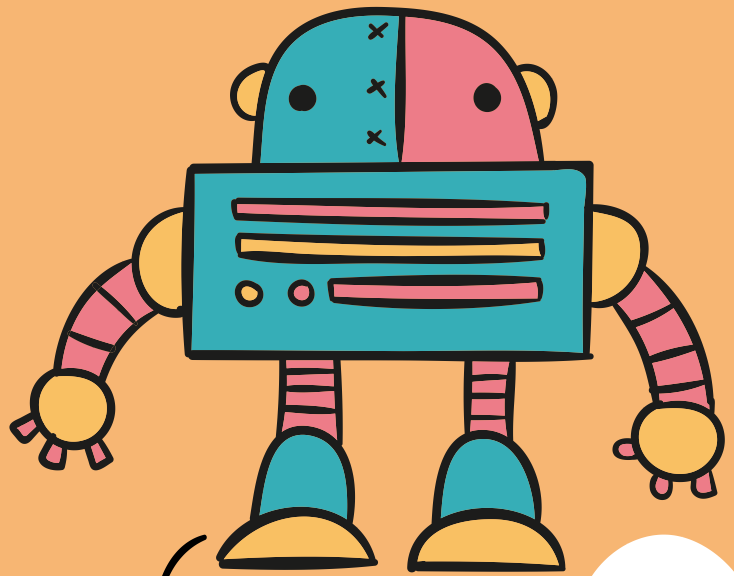
- Not a lot of Computer Vision applications in Fintech space
  - Initially wanted to use CNN on vehicle insurance but already done
- Thought of NFTs – usually images / pixel arts that carry a price tag
- Idea: Train a CNN model that learns what makes an image worth its value
- Finally, use model to predict the price of any piece of artwork

What makes this image worth?

"Cryptopunk #7523"
$11.75 million

02

Execution Flow

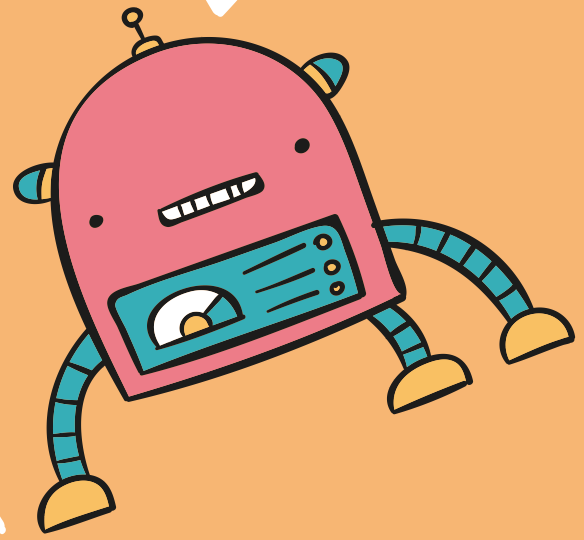


What was my plan?

1. **Scrape or download** large amounts of NFT images and prices
2. Do some **cleaning**, eg. extracting relevant information, scaling the prices
3. Split and feed data into pre-trained or custom **CNN model with regressor**
4. CNN model output has to be **Dense(1) layer** to get a continuous output
    - CNN + Regression is niche; managed to find use case for predicting steering angles for self-driving cars using dash cam feeds
5. ???
6. Profit

03

Analysis



What went wrong?

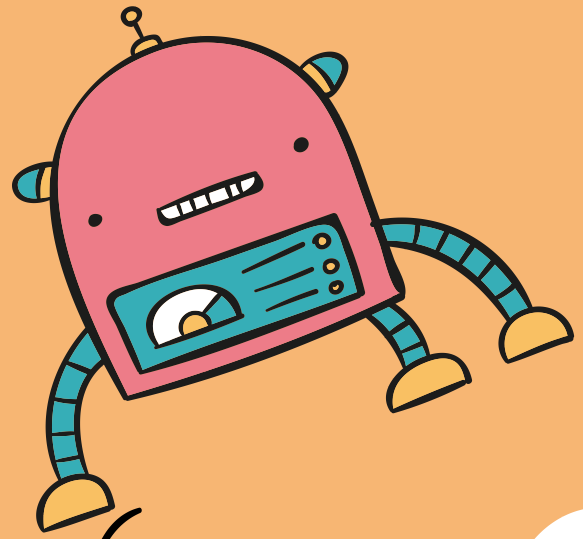
- Not understanding NFT pricing fundamentals
  - Was aware from the start that NFT prices usually don't make sense
  - But still wanted to test out my hypothesis that a model can learn
- Hard to remove **outliers** and **scale** pricing data
  - What constitutes as outliers?
- Did not consider **price changes over time**
  - Information that cannot be extracted from just an image

Problems with NFT Prices

- NFTs are often fueled purely by **speculation** and **social media hype**
- This means they are often the vehicle for **pump and dumps** [Castor, 2021]
- "Half-Billion Dollar 'Fake' NFT Sale Becomes Real PR Stunt" [Vold, 2021]
  - Could have potentially sold to a gullible buyer at that price
  - Insane prices also from **insider "bidding wars"**
- They can also be part of **money laundering** schemes [Woloszynski, 2021]
- These cause prices to **make no sense** and the **underlying art be immaterial**

04

Improvements



What could I have done instead?

- Change the problem statement and hypothesis
  - Instead of predicting prices from pixel positions on an image
- Alternative Idea: A More Traditional ML Method (No CNN)
  - Feed in social media sentiments and mentions
  - Feed in popularity of artist
  - Feed in NFT trait rarities to estimate scarcity
  - Simplify prediction output to range of prices instead of actual prices

Thank You!