Inframind S–IV

Enterprise AI

Aniket Somwanshi

(DT20206604138)

YouTube

https://www.youtube.com/watch?v=a8Sp6CAd08Q

GitHub

www.github.com/aniket–somwanshi/inframind–enterprise–ai

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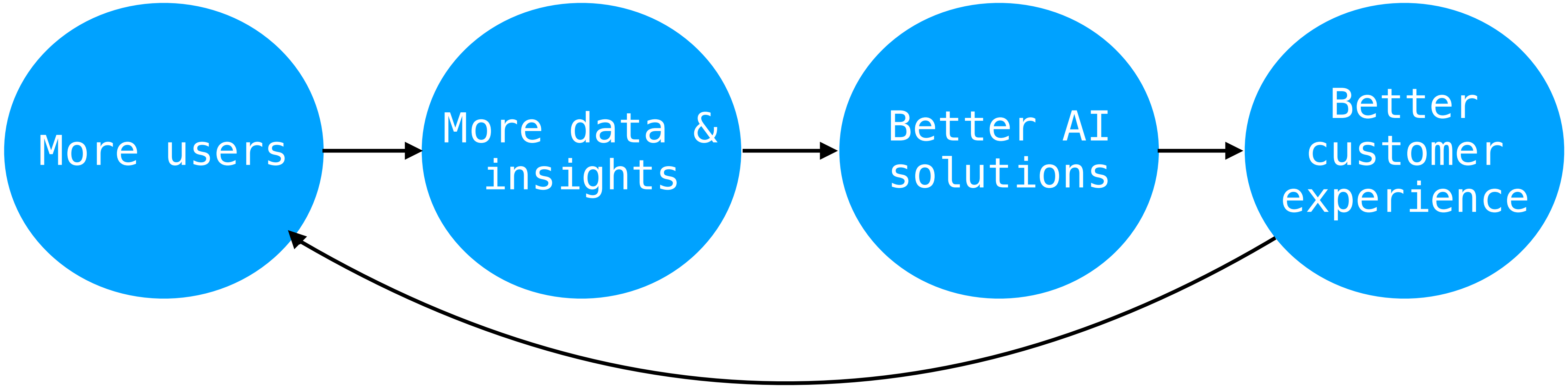
1. Motivation

1.1 Why is Enterprise AI important?

Current Market situation is “Winner takes all”.



With AI empowering businesses using data, early adopters of AI will soon become leaders in the market. So if a business waits for few years to adopt AI, it might be too late to catch up in the market.

1.2 Solutions proposed

How do you come with AI use case in your company? Every company has its own set of products, services and customers. Inventing the AI use case in your business is the most crucial step because of the expected return on investment.

In my proposed solution, I have discovered 2 novel use-cases:

1. **Match-day Alerts** (Customer Engagement)

2. **Sell Optimization** (Customer Retention)

Match-day Alerts

2. Introduction to use case

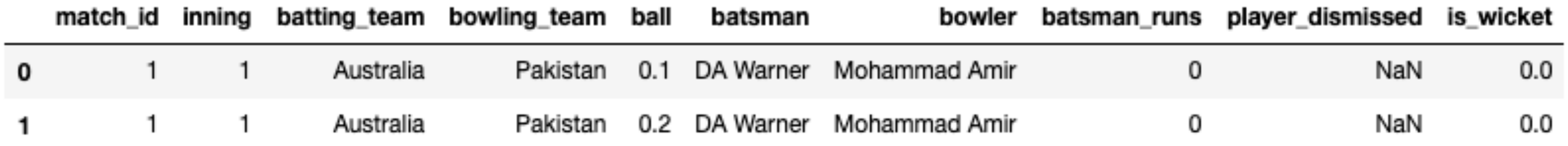
Consider the use case of HotStar, a subscription based model for live sports-streaming. There are several other competitors out there which provide free sports live-streaming services. Customer acquisition and retention are huge challenges. Cricket ODI matches last for about 7 hours. Majority of viewers don’t have the time to watch the whole live match. At the same time, the viewers don’t want to miss the exciting moments in the match.

The proposed solution for the use case is `Match-day Alerts`. Viewers will receive alerts during the live match when big moments are about to occur.

3. Approach to solution

The goal is to predict whether a “big” moment will occur in the current over or not. Big moment will be the predictive feature defined as: “wicket in this over” or “multiple boundaries in this over”

We may start with analysing some preliminary ball by ball data of ODI matches.



	match_id	inning	batting_team	bowling_team	ball	batsman	bowler	batsman_runs	player_dismissed	is_wicket
0	1	1	Australia	Pakistan	0.1	DA Warner	Mohammad Amir	0	NaN	0.0
1	1	1	Australia	Pakistan	0.2	DA Warner	Mohammad Amir	0	NaN	0.0

Although, we will need the following complex features that can better quantify all the aspects of the match:

State of the game: wickets_so_far, runs_so_far, run_rate_last_5_overs, balls_in_partnership, balls_since_last_boundary

Players: bowler’s_average, bowler’s_strike_rate, batsman’s average, batsman’s strike_rate

3.1 Challenges & considerations

- **Highly Imbalanced Dataset:**

In a 50-overs match, the number of “big” overs are a minority, making the predictive class population to be only 10%.

- **High amount of Noise:**

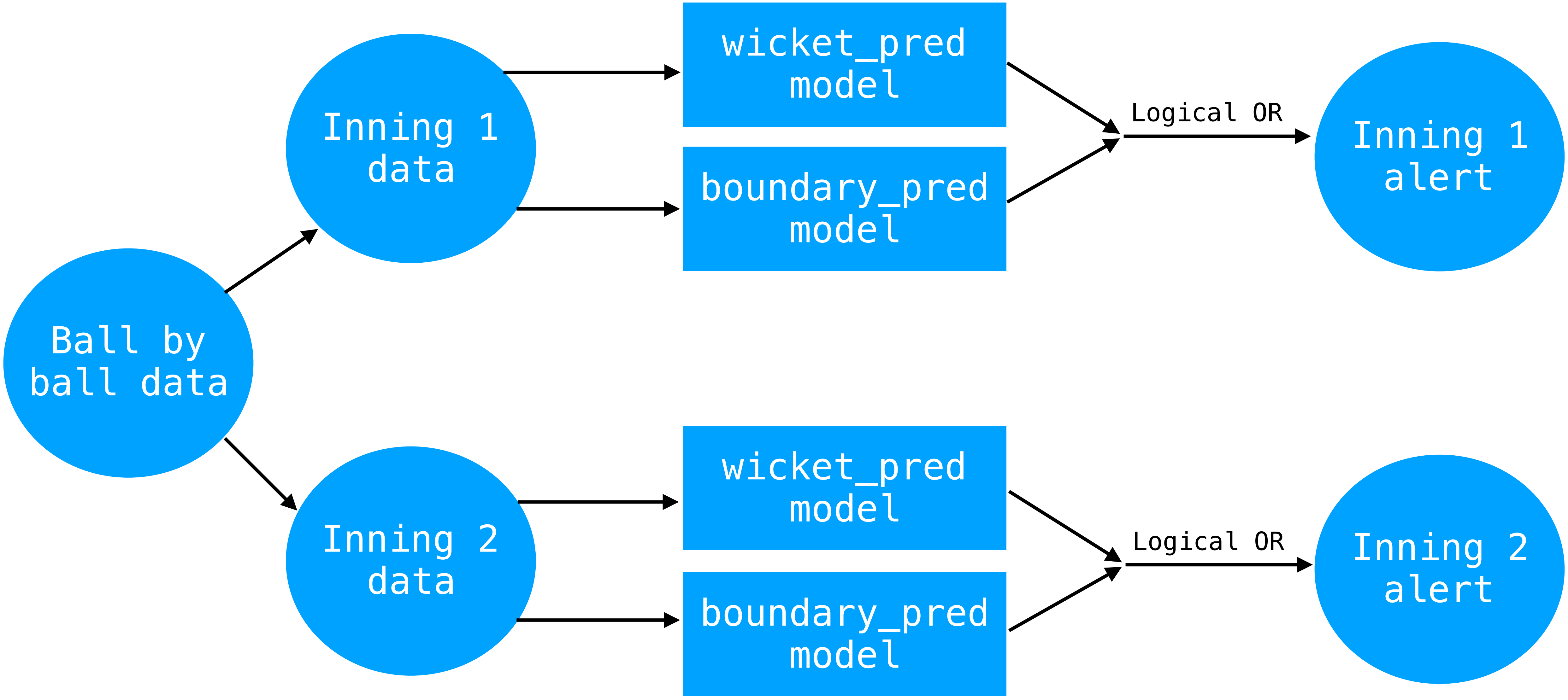
Cricket is a game of unexpected events, often the boundaries are un-intentional or the batman’s strategy of play might change from game to game, leading to a lot of noise in the data.

- **Prone to Overfitting:**

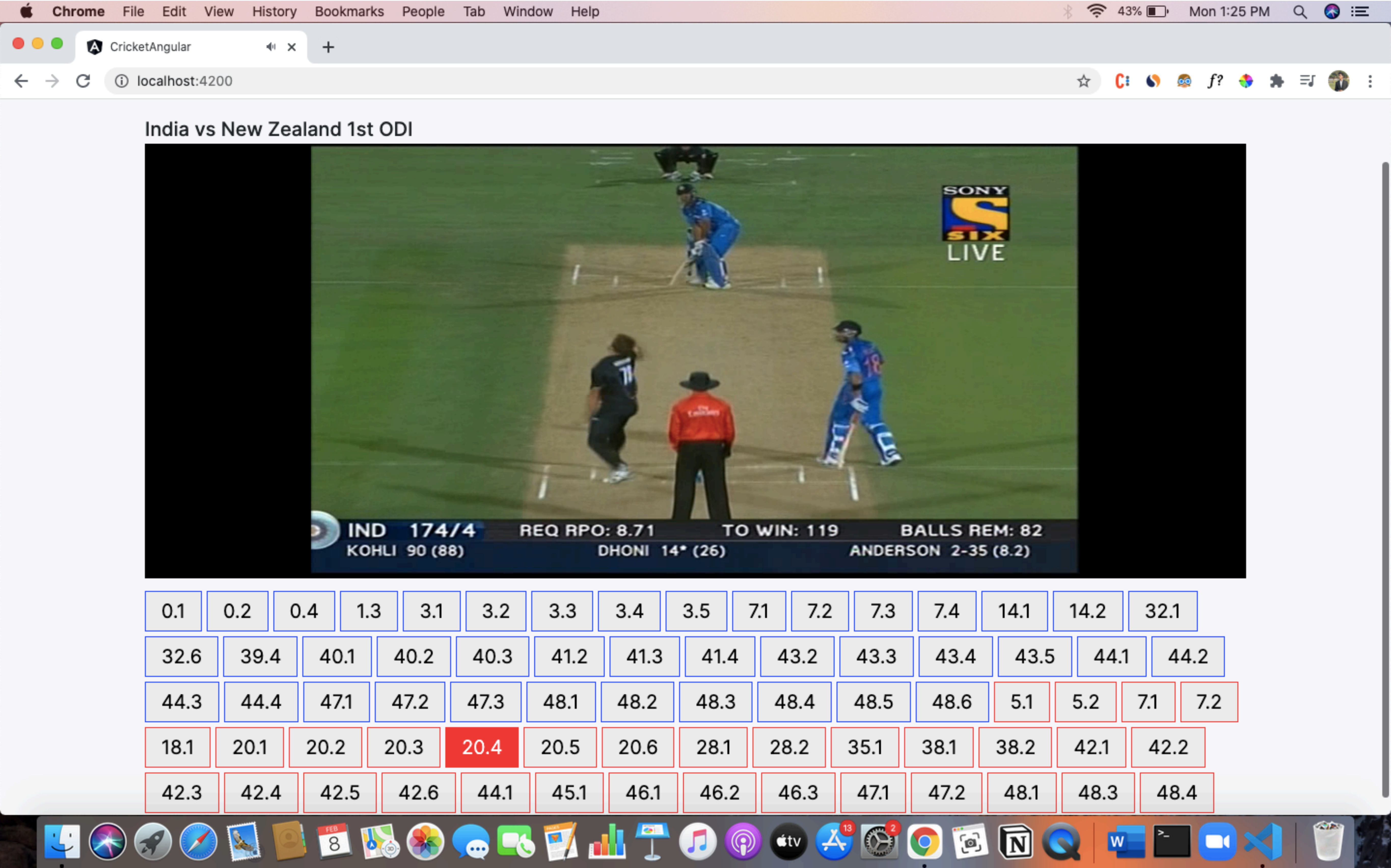
Modelling such a complex problem may demand complex features, but they can often lead to overfitting and may fail to generalise for unseen data.

4. High Level Architecture

- **4 feeder models are used for final prediction:** innings_1_wicket, innings_1_boundary, innings_2_wicket, innings_2_boundary.



5. User Interface



India vs New Zealand 1st ODI

Sell Optimization

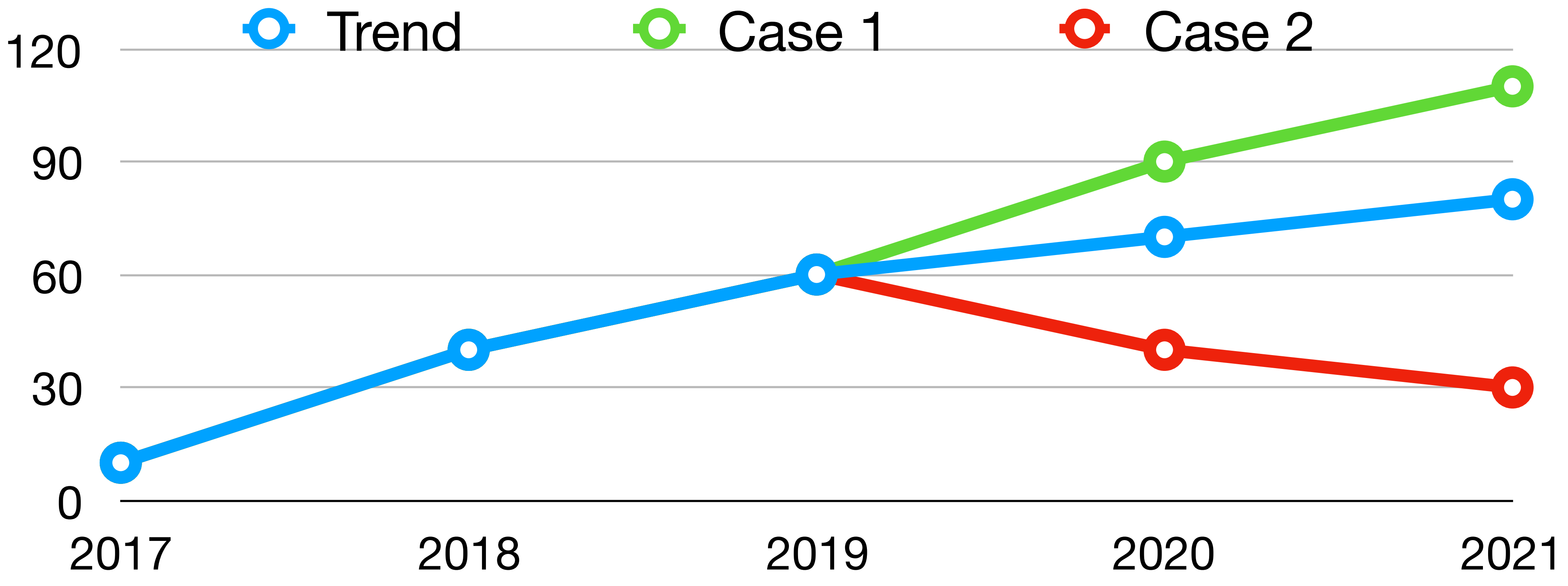
2. Introduction to use case:

Consider the use case of Ebay, an E-commerce platform for buying and selling products. The community relies heavily on C2C. Although, “selling on Ebay" is not yet in the comfort zone of Ebay users. Mainly because of hesitance on when to sell what. Selling a pre-owned product today, may result in loss due to increase in it’s price 3 years later. Conversely, not selling a product in it’s peak time, may result in a consequent loss.

The proposed solution for the use case is `Sell Optimization`. Users are informed about the Optimal year and month to sell a particular pre-owned product, so as to maximise possible profit & to retain the C2C community.

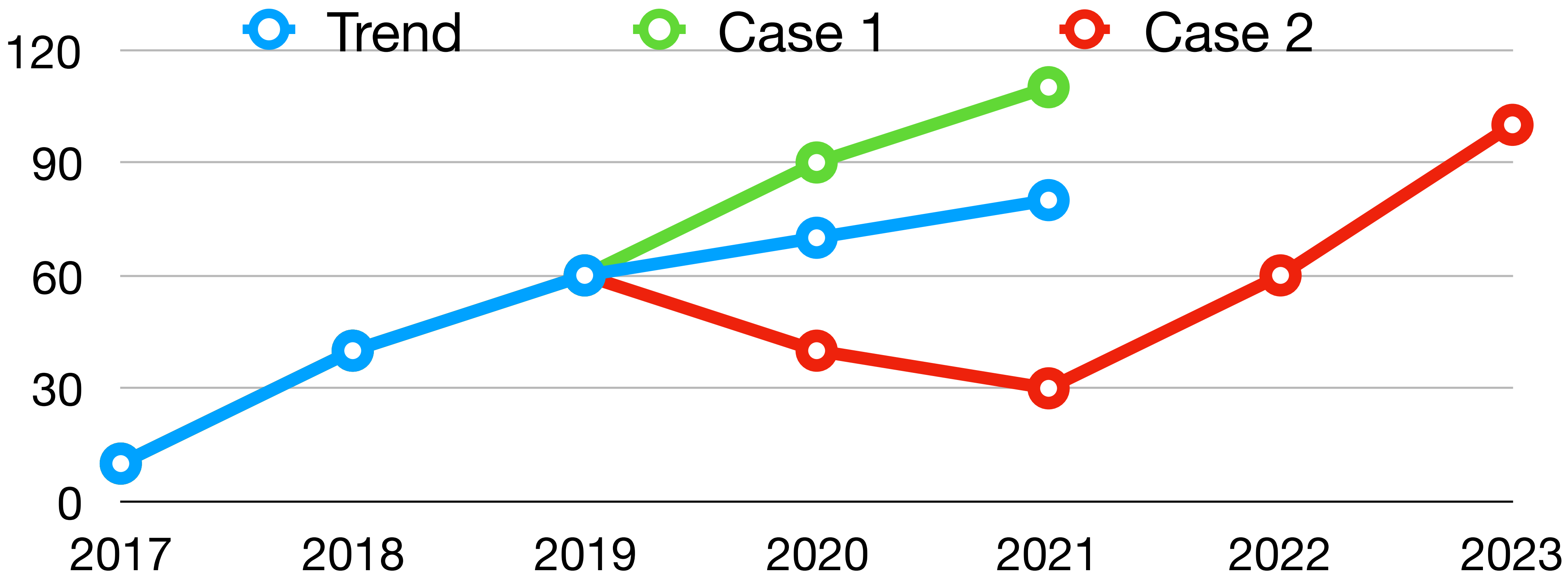
3. Approach to Solution

Consider the current year to be 2019. The general trend of the sales data is slightly increasing. Case 1: If we decide to sell the product at this stage, we would incur a loss because in 2021 the graph is increasing furthermore. Case 2: the trend is decreasing and if we sell at this point, it will be the optimal time.



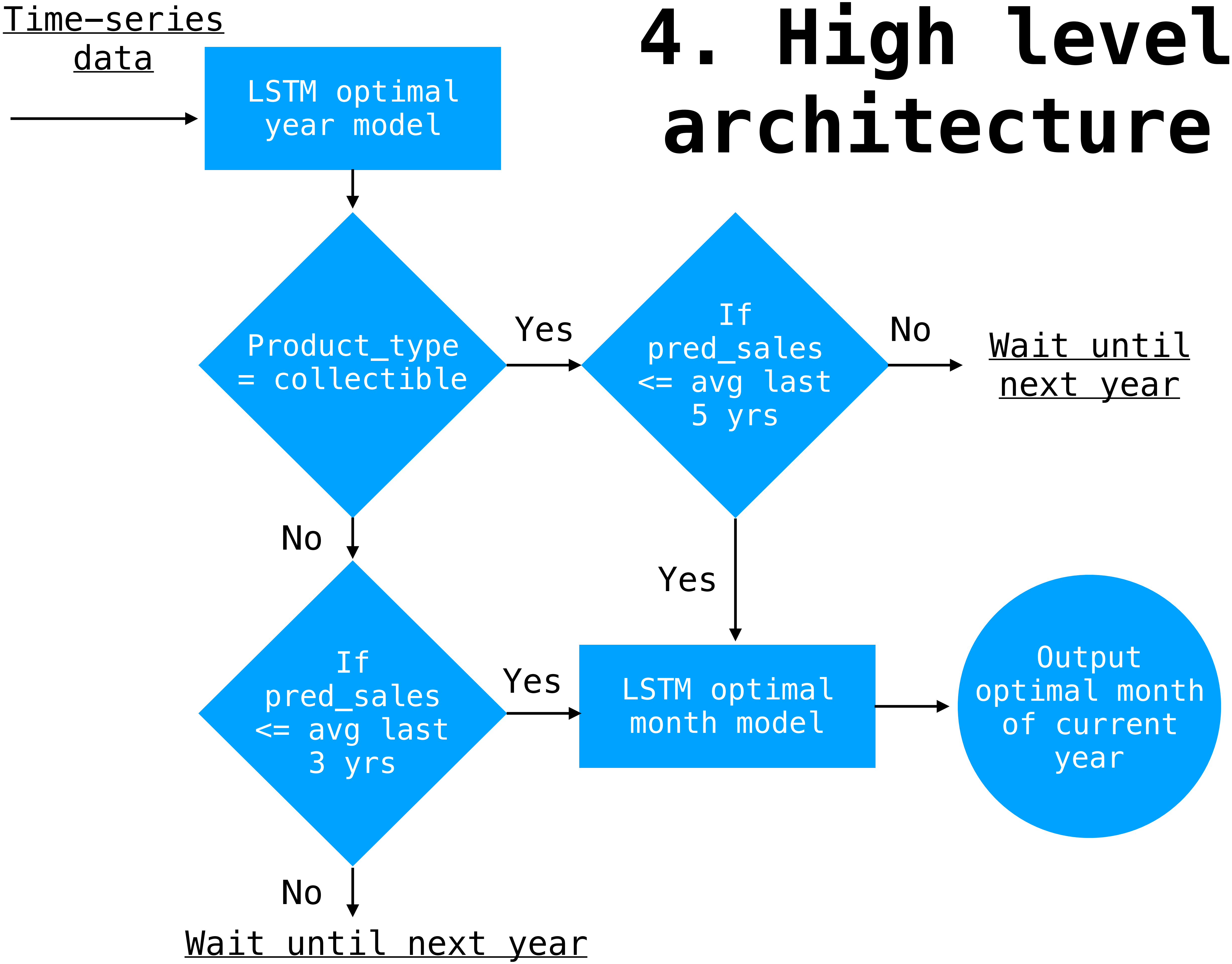
Here in case 2: Although the trend is decreasing up until 2021, the trend reaches peak in 2023. As it turns out, waiting until 2023 is the optimal move.

Thus, we need an algorithm to figure out the optimal sell time over a stretch of a period rather than instantaneously.

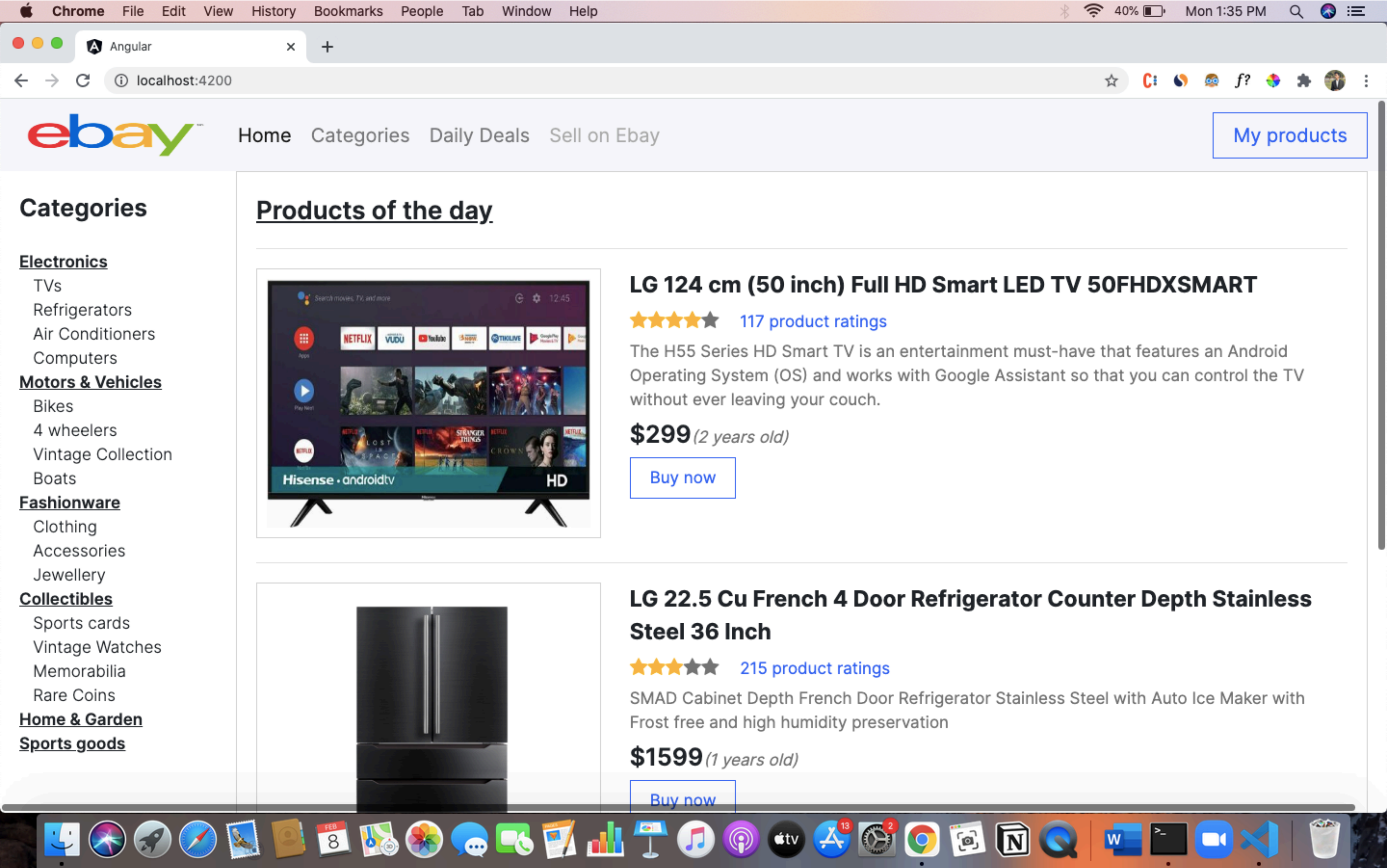


The data for the given problem is a time-series of sales up until current year. 2 feeder models (LSTM) for optimal_year and optimal_month forecasting, are fed to the algorithm.

4. High level architecture


Time-series data
LSTM optimal year model
Product_type = collectible
Yes
No
If pred_sales <= avg last 5 yrs
No
Wait until next year
Yes
If pred_sales <= avg last 3 yrs
Yes
No
Wait until next year
LSTM optimal month model
Output optimal month of current year

5. User Interface



Categories

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Home & Garden

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Products of the day

LG 124 cm (50 inch) Full HD Smart LED TV 50FHDXSMART

★★★★★ 117 product ratings

The H55 Series HD Smart TV is an entertainment must-have that features an Android Operating System (OS) and works with Google Assistant so that you can control the TV without ever leaving your couch.

$299 *(2 years old)*

Buy now

LG 22.5 Cu French 4 Door Refrigerator Counter Depth Stainless Steel 36 Inch

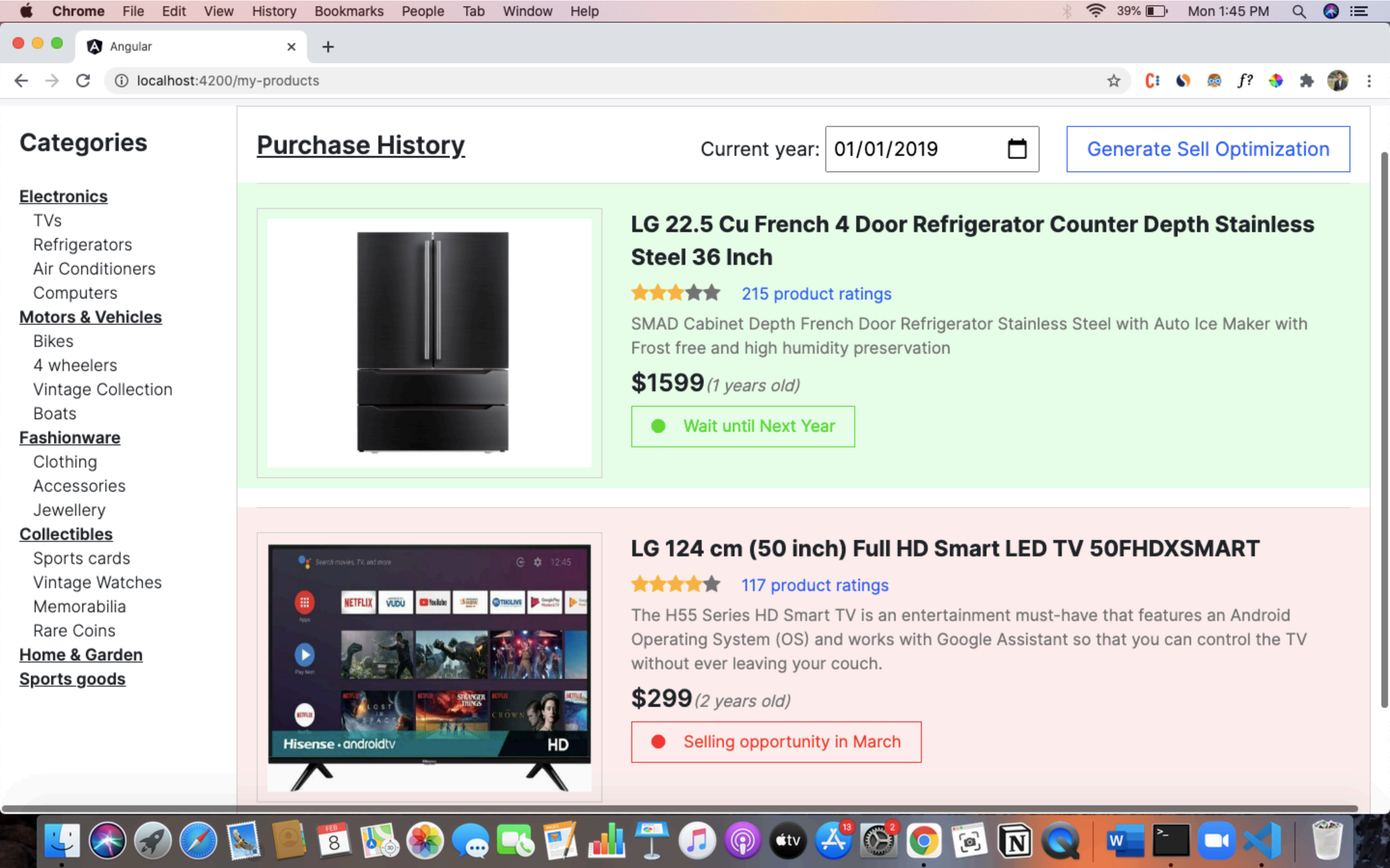
★★★★★ 215 product ratings

SMAD Cabinet Depth French Door Refrigerator Stainless Steel with Auto Ice Maker with Frost free and high humidity preservation

$1599 *(1 years old)*

Buy now

5. User Interface



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- Jewellery

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- Vintage Watches
- Memorabilia
- Rare Coins

Home & Garden

Sports goods

Purchase History

Current year: 01/01/2019

Generate Sell Optimization

LG 22.5 Cu French 4 Door Refrigerator Counter Depth Stainless Steel 36 Inch

★★★☆☆ 215 product ratings

SMAD Cabinet Depth French Door Refrigerator Stainless Steel with Auto Ice Maker with Frost free and high humidity preservation

$1599 *(1 years old)*

● Wait until Next Year

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● Selling opportunity in March

6. Technologies used

Specifications:

Python 3, flask 1.1, Angular 7.0

Platform (training): Google Colab

Hardware (training): Tesla K80, 12 GB RAM

Open source libraries: Keras, Sklearn

*Note: I hereby declare that the content produced is solely the work of my own and does not contain any material owned by a third-party.

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