



GMR Auto Analyst Agent, Health Menu Assistant, and ImageGuard using Agentic Multi Tools LLM and Diffusion on Grab Merchant

CMPWG Team

Team Member



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Project Introduction

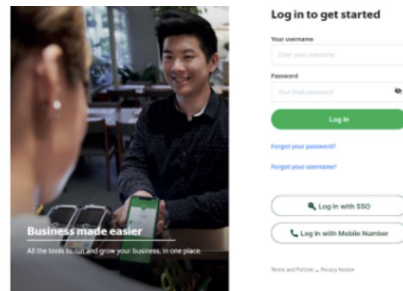


In today's dynamic food delivery market, enhancing merchant performance and user experience is paramount. To address these needs, I have developed three innovative data solutions for Grab merchants: the GMR Auto Analyst Agent, Health Menu Assistant, and ImageGuard. Utilizing cutting-edge technologies like Agentic Multi Tools LLM and Diffusion, these solutions offer comprehensive support for merchants and users alike.

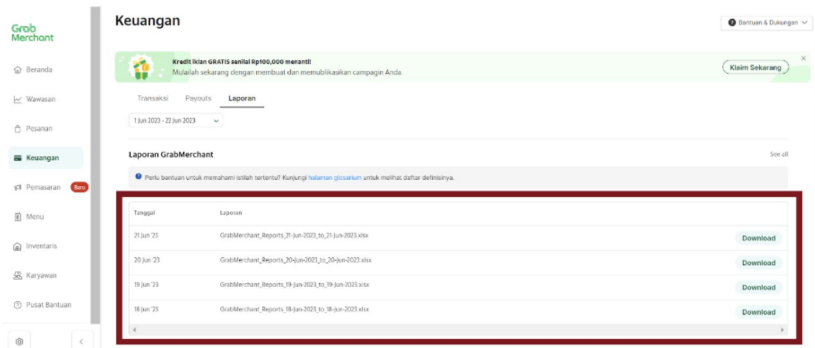
Project Introduction

1. Grab Merchant Report Auto Analyst Agent

As merchant, not all of them are aware about what insights the GMR might boost their performance. Or in other words, merchant can get the plot and metrics but they don't know how to do with it. The GMR Auto Analyst Agent is an LLM-based agent that automatically generates detailed performance analyses for each merchant on a defined schedule (can be streamed later if needed). This solution empowers merchants with actionable insights, enabling them to make data-driven decisions that enhance their operations and profitability.



2. Klik menu **Kuangan**, lalu klik bagian Laporan.



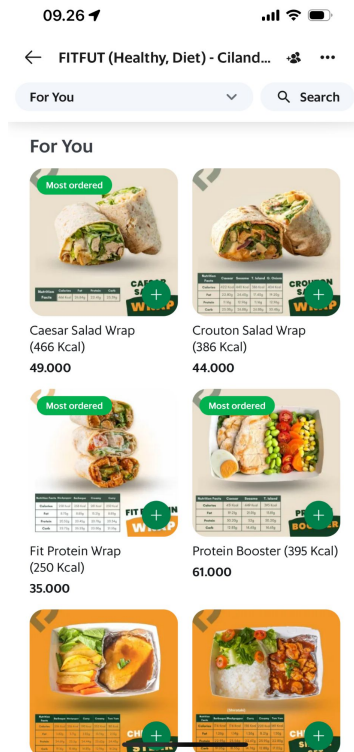
3. Klik **Download**, lalu file dalam bentuk Excel akan tersedia.

Are all Merchants aware of the GMR insights?

Project Introduction

2. Health Menu Assistant

Not only considering merchant side, as Grab Customer, I (who face rapid weight gain) somewhat find it difficult when deciding which food I need to order while maintaining my calories intake. Current Grab Food UI only displayed calories for Merchant with “healthy food” categories. The Health Menu Assistant is an LLM-powered feature designed to boost user engagement by providing calorie estimations and health tags such as "vegan", "dietarian", etc, for each food item. This feature helps users make informed choices about their meals, promoting a healthier lifestyle and increasing their satisfaction with the platform.



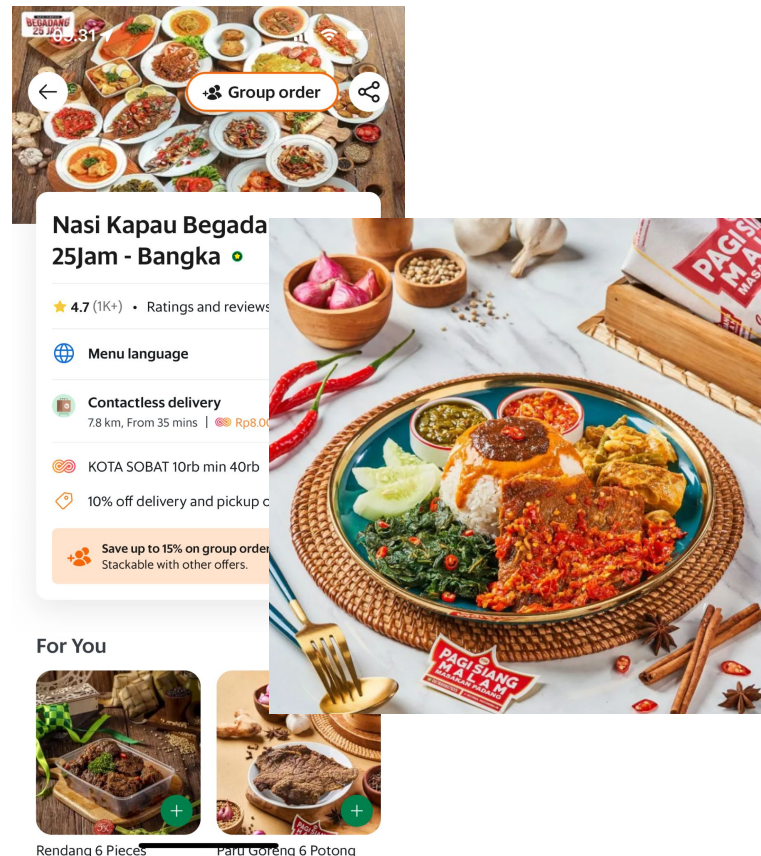
Current calories indicator (manual by resto)

Project Introduction

3. ImageGuard

As Grab customer, we despise Merchant that don't use their original photo of food product. What we realize that Grab will give labels for product that doesn't have any photo. But, we also notice that there are still many Merchant photo that seems like a template but don't have the labels.

Developing engine that scan all photo product will costly. Thus, we develop ImageGuard, which is an advanced image lab we developed with Stable Diffusion framework. It detects bordered images, enhances low-quality images, and identifies merchants using another Merchant's images. By ensuring high-quality, authentic visuals, ImageGuard enhances the user experience and maintains the integrity of the platform.



One of resto that use Pagi Siang Malam photo product

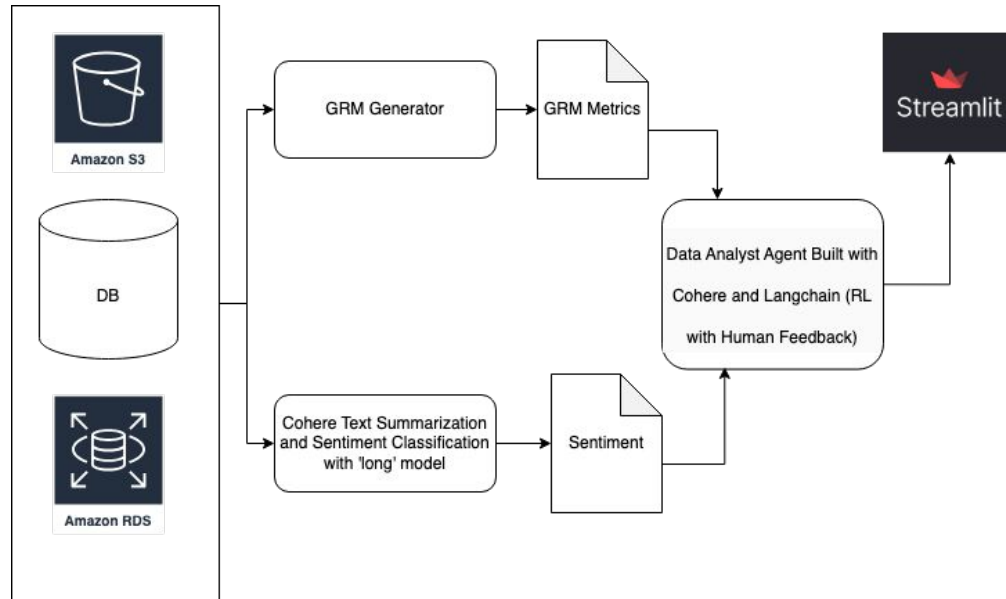
Project Summary



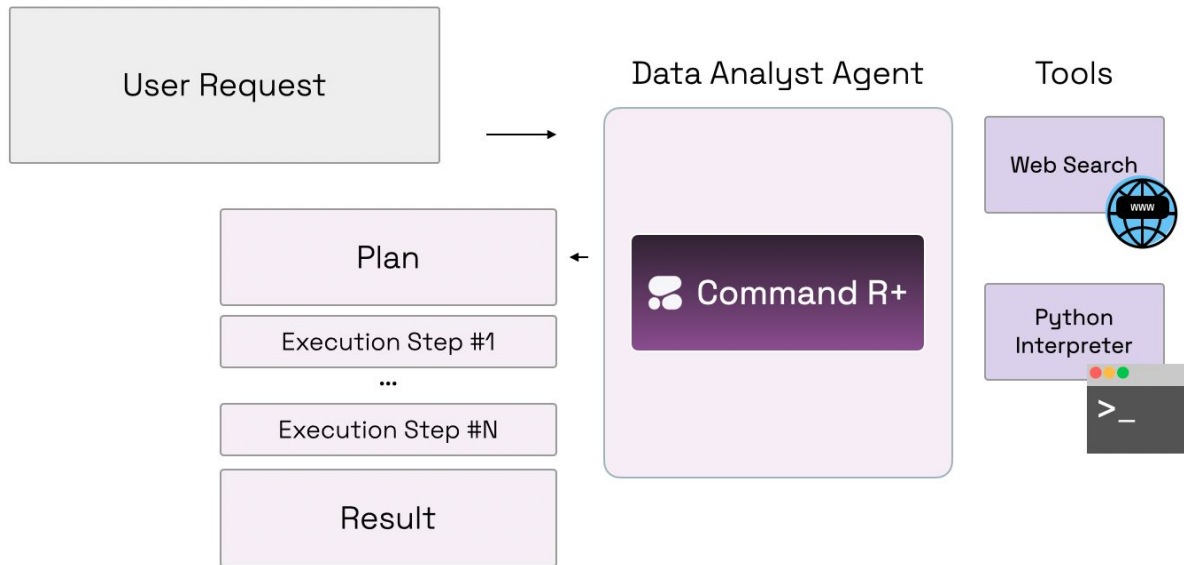
- As all of our team member are DS/MLE, we are focusing on build ML/DL/GenAI powered solution.
- Enable Finance Analysis Bot that is capable of Internet Search and Executing Tools to generate Financial Report so the Merchant could have its own Data Analyst
- Enable QoL enhancement on Menu creation for the Merchant
 - Food Image Beautifier
 - Caption Generation
 - Automated tagging with RAG
 - Nutritional Approximation Model by Ingredients Listing
- Develop LLM powered nutrional health agent (health tagging and calories estimation) with Gemma-2-llamacpp
- Develop Grab Merchant's Image Enhancement with Diffusion Model.

GMR Auto Analyst Agent

Auto analyst for GMR and sentiment data.



GMR Auto Analyst Agent

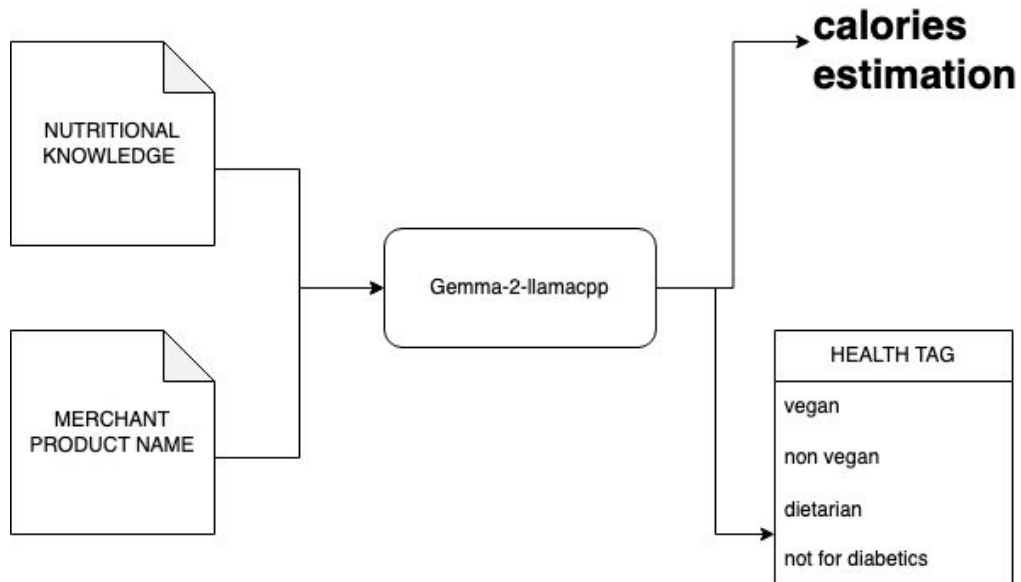


Built with Cohere and Langchain : Reinforcement Learning with Human Feedback

Health Menu Assistant

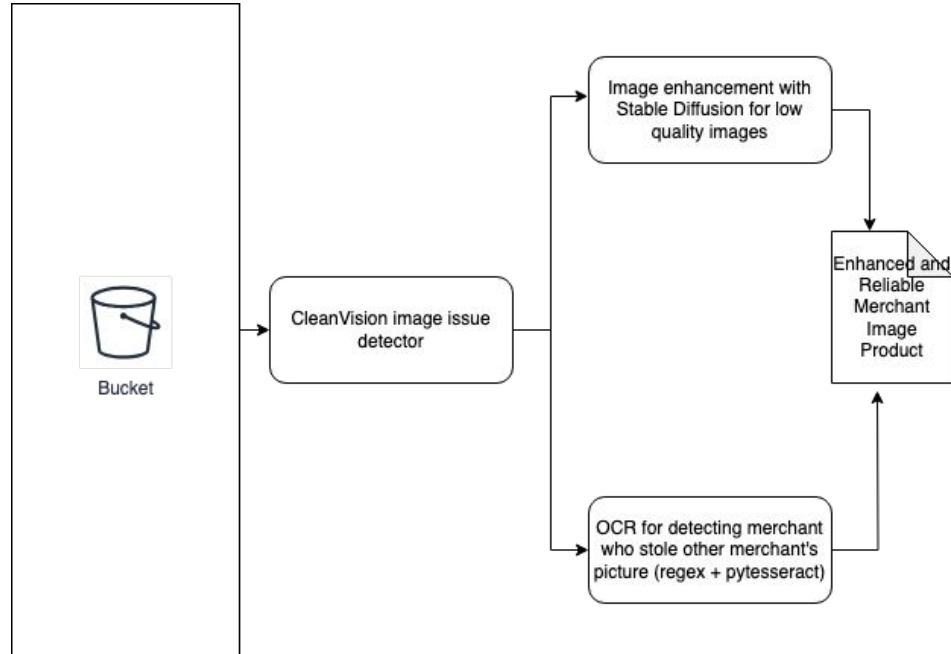
Food Image Improver, Caption Generation, Health Tagging and Nutritional Listing

(system design (only model))



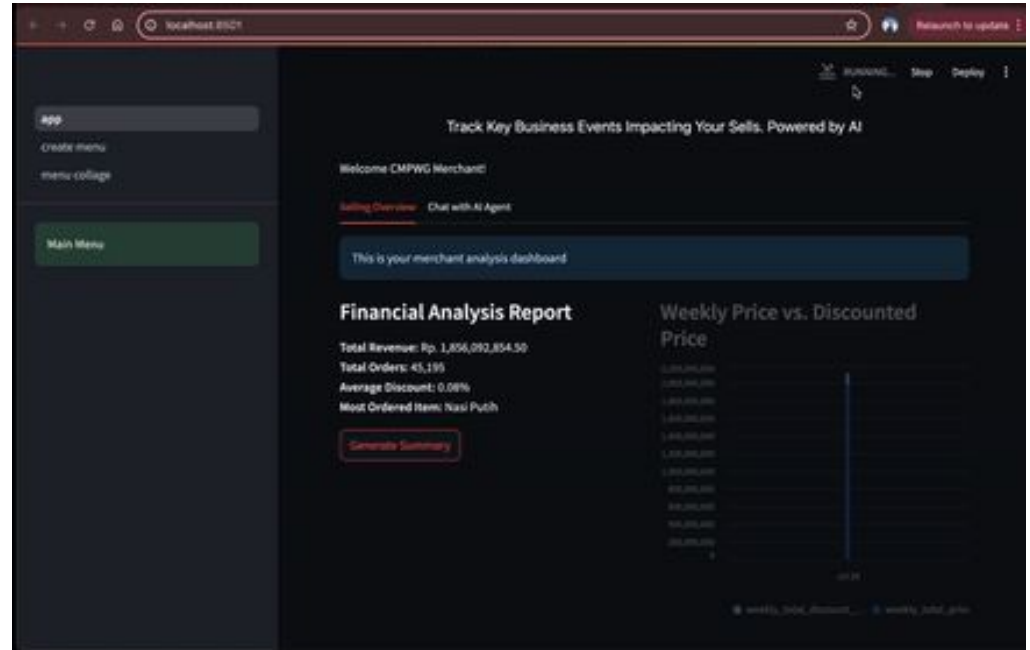
ImageGuard

Enhanced and more reliable Merchant's product image.



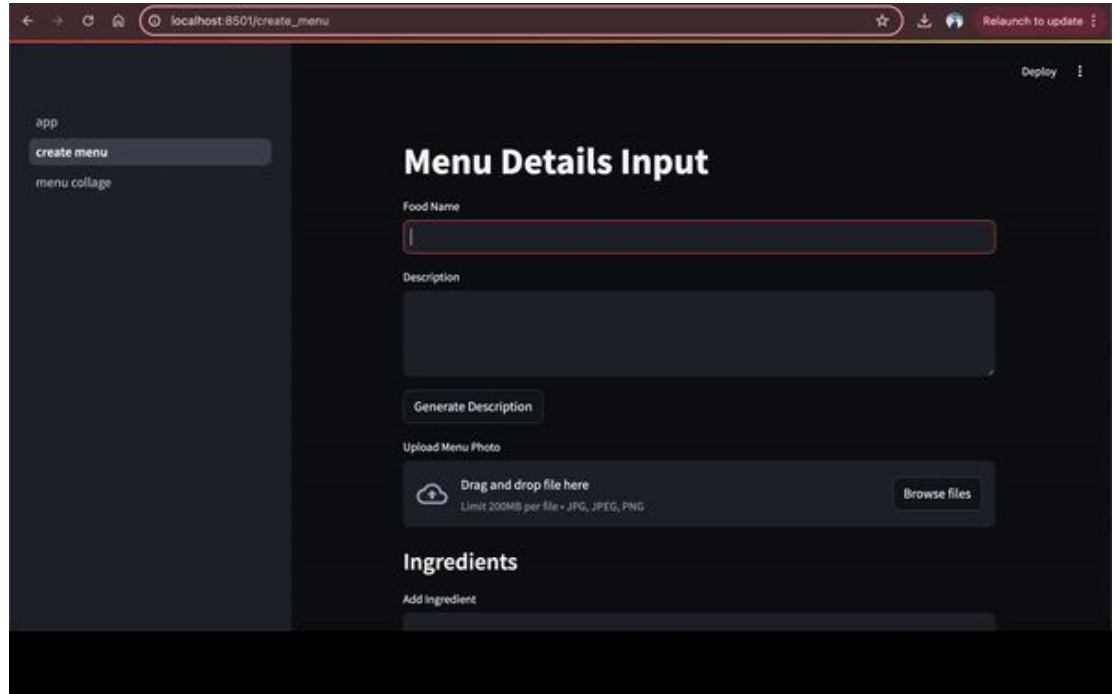
Demo

Generate Report based on Selling, Sentiment and Batched Pipeline-like data.



Demo

Menu input, generate caption,
tagging and Nutritional Value for
merchant.



The screenshot shows a web browser at localhost:8501/create_menu. The interface has a dark theme. On the left is a sidebar with a file explorer showing 'app', 'create menu' (selected), and 'menu collage'. The main area is titled 'Menu Details Input' and contains the following fields and controls:

- Food Name:** A text input field.
- Description:** A large text area.
- Generate Description:** A button below the description field.
- Upload Menu Photo:** A section with a cloud icon, the text 'Drag and drop file here', a subtext 'Limit 200MB per file • JPG, JPEG, PNG', and a 'Browse files' button.
- Ingredients:** A section with the label 'Add Ingredient' and a text input field.

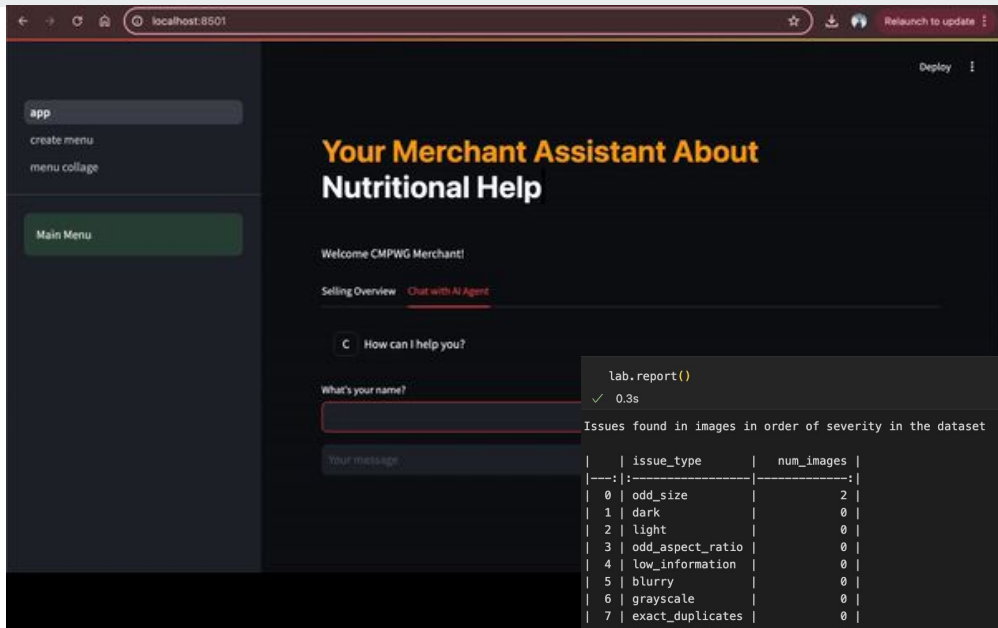
At the top right of the main area, there is a 'Deploy' button and a menu icon.

[45195 rows x 11 columns]

running 0th step.
I will run the code to show the current data.

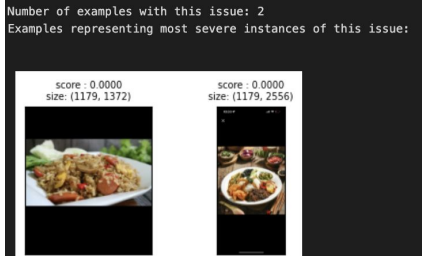
running 1th step.
= running tool run_python_code, with parameters: {'code': "import pandas as pd\nndf_grm = pd.read_csv('/Users/sanggusti/Study/hackathon/cmpwg_hackjakarta/src/financial_agent/../../data/food_dataset_v1.csv')\nndf_review = pd.read_csv('/Users/sanggusti/Study/hackathon/cmpwg_hackjakarta/src/financial_agent/../../data/merchant_reviews_sample.csv')\n\nprint('GRM Dataframe:')\nprint(df_grm)\nprint('\n')\nprint('Review Dataframe:')\nprint(df_review)"}
= tool results: [{'python_answer': 'GRM Dataframe:\n\nmerchant_name merchant_area categor\ny ... description merchant_id date\n0 330 Kopi, Ciledug\njakarta Kopi/Minuman/Roti ... Sajian Kopi Susu Gula Aren Yang Berbeda Dari K... M001 2024-07-25\n1 330 Kopi, Ciledug jakarta Kopi/Minuman/Roti ... Sajian Kopi Susu Gula Aren Yang Berbeda D\nari K... M001 2024-07-25\n2 330 Kopi, Ciledug jakarta Kopi/Minuman/Roti ... Sajian Susu\nCoklat Milo Dengan Racikan Khas 3 ... M001 2024-07-27\n3 330 Kopi, Ciledug jakarta Kopi/\nMinuman/Roti ... Sajian Susu Coklat Milo Dengan Racikan Khas 3 ... M001 2024-07-24\n4 330 Kopi,\nCiledug jakarta Kopi/Minuman/Roti ... Sajian Susu Coklat Milo Plus Espresso Dengan R... M00\n1 2024-07-24\n...\n...\n...\n45195 Zeger!, Sidoarjo surabaya Minuman/Kopi ...
1L Hazelnut Choco Milktea M687 2024-07-26\n45191 Zeger!, Sidoarjo sura\n1L Dolce Latte M687 2024-07-24\n4519\nbaya Minuman/Kopi ...
2 Zeger!, Sidoarjo surabaya Minuman/Kopi ...
M687 2024-07-23\n45193 Zeger!, Sidoarjo surabaya Minuman/Kopi ...
1L Kopi Susu Gula Aren M687 2024-07-27\n45194 Zeger!, Sidoarjo surabaya Minuman/\nKopi ... 1L Salt Caramel Machiato M687 2024-07-26\n45195 rows x 11 colu\n\ns]\n\n\nReview Dataframe:\nMerchant_ID rating reviews\n0 M001 4.168409 ["Money Dijon flavor: okay flavor, but both my...\n1 M002 4.247874 ["I'm no\nsure why, but this is our favorite p...\n2 M003 4.096031 ["OMG these things are delicious!@ I'\nm\nnot a c...\n3 M004 4.188612 ["A good tasting light chip that has some valu...\n4 M005 4.2\n09476 ["I wouldn't even think of buying this product...\n5 M006 4.205811 ["While the restaurants\nalways do it best, the...\n6 M007 4.234375 ["A nice case of chips that are quite tasty. I... \n7\n8 M008 4.097483 ["Green Mountain "Nantucket Blend" K-Cups make...\n9 M009 4.290323 ["4 bags\nof chips were open when I received th...\n0 M010 4.164482 ["I got a wild hair for taffy and order\nd\ned this...\n1 M011 4.175563 ["They have this in a local diner that I eat i...\n2 M012 4.20\n0951 ["this has to be one of the best teas I have e...\n3 M013 4.153197 ["The tea tin is guarding\nthe aroma very well...\n4 M014 4.159367 ["I am a energy junkie and I'm not sure if thi...\n5 M015 4.184886 ["I received a single 8.5 ounce container of ON...\n6 M016 4.191099 ["I heard\nsome great things about Sassafras an...\n7 M017 4.114889 ["I really love this sugar and price-wise\nit's...\n8 M018 4.207241 ["With Kettle Chips, you really have to be car...\n9 M019 4.125\n301 ["I've tried a few different 'Dirty Martini'\n m...\n0 M020 4.162037 ["The BEST investment I\n've ever made for ginge...\n\n}}
Here is the GRM Dataframe:

merchant_name	merchant_area	category	...	description	merchant_id	date
330 Kopi, Ciledug	jakarta	Kopi/Minuman/Roti	...	Sajian Kopi Susu Gula Aren Yang Berbeda Dari K...	M001	2024-07-25
330 Kopi, Ciledug	jakarta	Kopi/Minuman/Roti	...	Sajian Kopi Susu Gula Aren Yang Berbeda Dari K...	M001	2024-07-25
330 Kopi, Ciledug	jakarta	Kopi/Minuman/Roti	...	Sajian Susu Coklat Milo Dengan Racikan Khas 3 ...	M001	2024-07-27
330 Kopi, Ciledug	jakarta	Kopi/Minuman/Roti	...	Sajian Susu Coklat Milo Dengan Racikan Khas 3 ...	M001	2024-07-24
330 Kopi, Ciledug	jakarta	Kopi/Minuman/Roti	...	Sajian Susu Coklat Milo Plus Espresso Dengan R...	M001	2024-07-24



Demo

Tools Financial Agent that are able to use Tools and validate the result and able to internet search.



```
lab.report()
```

✓ 0.3s

Issues found in images in order of severity in the dataset


	issue_type	num_images
0	odd_size	2
1	dark	0
2	light	0
3	odd_aspect_ratio	0
4	low_information	0
5	blurry	0
6	grayscale	0
7	exact_duplicates	0
8	near_duplicates	0

----- odd_size images -----


Number of examples with this issue: 2

Examples representing most severe instances of this issue:

score : 0.0000
size: (1179, 1372)



score : 0.0000
size: (1179, 2556)



```
pipe = pipe.to(cuda)

init_image = Image.open("IMG_1442.jpg").convert("RGB").resize((768, 512))
display(init_image)
prompt = "increase the food image quality, sharpness, bluriness, pixel, increase the contrast, sat
images = pipe(prompt=prompt, image=init_image, strength=.15, guidance_scale=7.5).images
```

Loading pipeline components...: 100% 7/7 [00:01<00:00, 2.73It/s]



Demo

Enhance Image quality and some diffusion tested.



Scalability and Improvement Points

- It's a PoC on Streamlit, of course it would work on my end but it's not Production ready to be used on a scale.
- The LLM that we're using is Product Grade Cohere Command R+ api credits. Around \$3 for million of requests. Hosting own LLM and finetune it in own environment would give a high initial cost but would be more sustainable forward
- Security concern of LLM with capability of executing tools since it could write, delete and stuffs with REPL
- Privacy part, the product grade LLM has its own license of collecting data.
- Future Roadmap? This feature prove to be flexible
- As per technology stack, our solution later can be configured on distributed processing manner, hybrid or on cloud.