

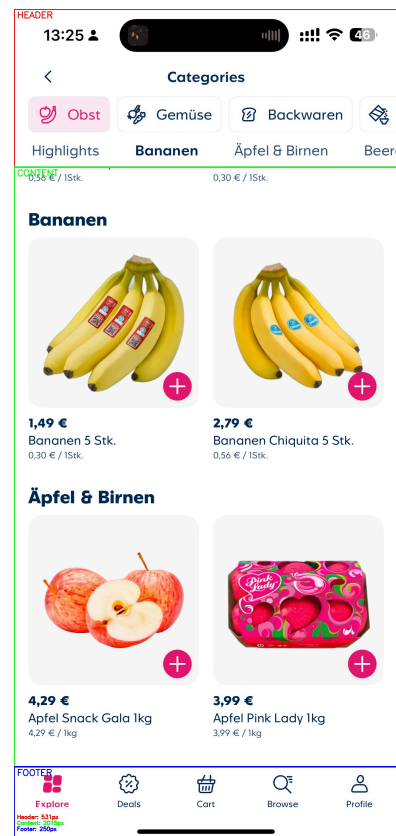
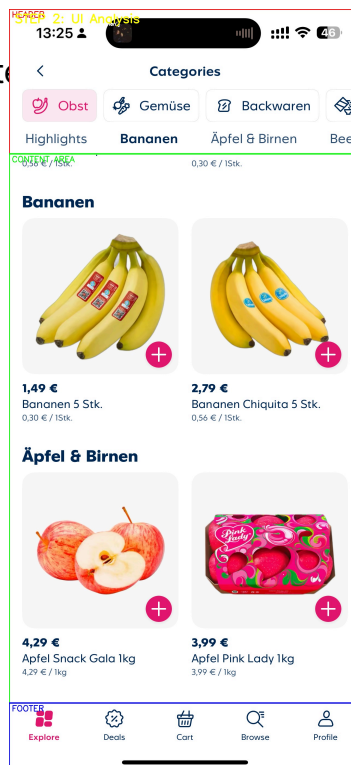
Image Pipeline

Step 0: UI Analysis

- Input:
 - Single screenshot (e.g IMG_7805.PNG)
- Goal:
 - Identify UI regions (header, content area, footer, navigation)

- Expected Output:

- IMG_7805_01_annotation.png - Image with UI regions highlighted
 -
- .csv or json File - File showing the rectangular coordinates of each UI region (e.g Header is [0,0], [513,1290]), Content area x (start), y(start), x(end), y(end)) etc.



Step 1: Category/Sub-Category Discovery

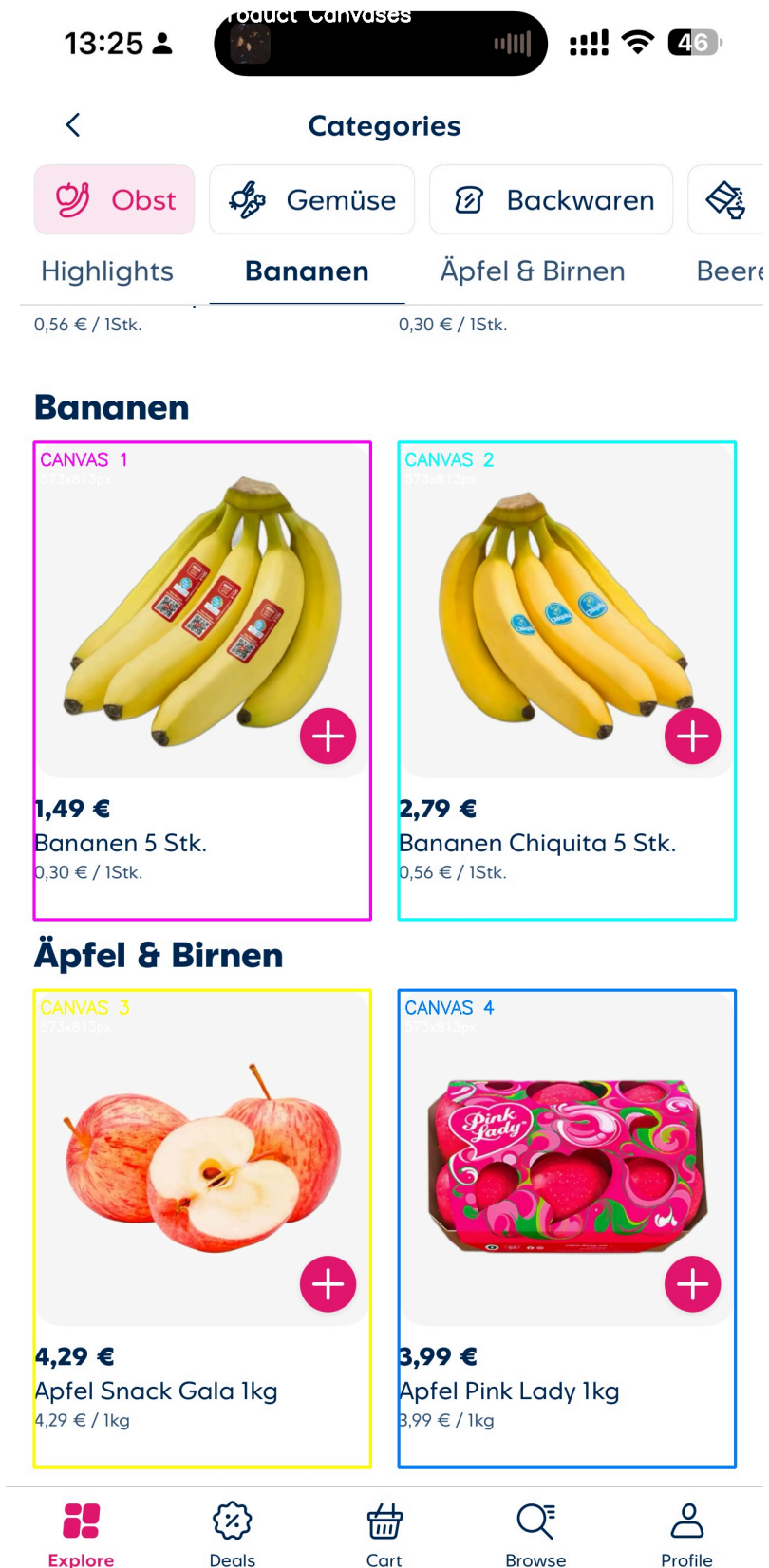
- Input:

- Output of Step 0.
- Goal:
 - Identify the category and sub category shown in the header section of the screenshot that is being processed.
- Expected Output:
 - Annotated Image Showing the Extracted Header section with the Category and Sub-Category regions.
 - A .csv/.json file for each file which contains various pieces of information about the particular image that was processed.
 - File Processing Timestamp
 - Filename
 - Category Text Co-Ordinates
 - Category Text
 - Should find categories like "Obst", "Gemüse"
 - Sub-Category Text Co-Ordinates
 - Sub-Category Text
 - "Bananen", "Äpfel & Birnen", etc.

Step 2: Canvas Detection

- Input:
 - Content region from Step 1
- Goal:
 - Find up to 4 product display areas (573×813px each). We are just trying at this point to identify the product canvases for each of the products we will process in the next step. The product canvas should encompass all of these elements.
 - Product Image Tile (Including a pink (+) add to cart button)

- Product Text (e.g Price, Description, Name, Weight, Cost per Kg or Cost Per Piece/Stück)
- Expected Output:



- Annotated Image from Step 1, with the image showing up to 4 colored rectangles over each product (product canvas) areas in the content area of the screenshot.
- .csv - file for each processed image

Step 3: Product Tile, Product Text, Add Product Button Detection

▼ Input:

- Output of Step 2 showing the up to 4 canvases that we will in this step analyse even further.

▼ Goal:

- To identify, locate each sub-section within each product canvas so can then extract those sections for processing in subsequent steps.

▼ Expected Output:

An annotated image from Step 2, with each product canvas further sub-divided with all the coordinates written to a .csv or .json file that will then allow us in the next step to extract (crop, cut) the various sections so we can then process all individually.

- IMG_7805_03_tiles.jpg - Image showing colored overlays on each product
- .json / .csv file - Coordinates of each part of the product canvas in the input file broken down even further.
 - Canvas1
 - ProductImage1 Co-ordinates
 - Btn 1 - Add to Cart Button - Co-ordinates (within the product Image)
 - Product Text Co-ordinates

Step 4 - Slicing

Input

- The .csv / .json files from Step 3 & the original input image.

Goal

- To extract the piece of each product canvas so we have them as a separate pieces we can process separately in a subsequent step.
- We will use the info contained inside to slice up the original input image to extract clean version of the various pieces

Expected Output

- The product Images for each of the product canvas with the add to cart button co-ordinates used to slice out the add to cart button so there is no more pink circulate button in the product images.
- The product text area slice out.

Step 5 - Processing

Input

- The cleaned product images (ie the add to cart button should have already been removed in step 4)

Goal

- To process the text area and product images to create a .csv/.json file with all the text information extracted and to have the background removed from the product images

Output

Step 6

Input

- the outputs of step 5.

Goal

- To name and relate the product images we need with the various peices of information we go so far in the pipeline.

Output

So we have a per input image, 4 (max) product tile images (with no more add to cart button or background) and a .csv file with the product name, product information and product categories and sub categories included.

This means we have a .csv file with the following columns.

- A - FileName
- B - Product1Image Filename
- C - Product Description e.g. Bananen 5 Stk.
- D - Product Price e.g. 1,49 €
- E - Product Brand
- F - Product Weight (if available)
- G - Product Quantity e.g. 5 Stück
- H - Cost per Kg
- I - Cost per Piece
- J - Product Category e.g Obst
- K - Product Sub-Category e.g. Bananen