DAISY INTELLIGENCE 2020 HACKATHON: DIGITAL FLYER PROCESSING
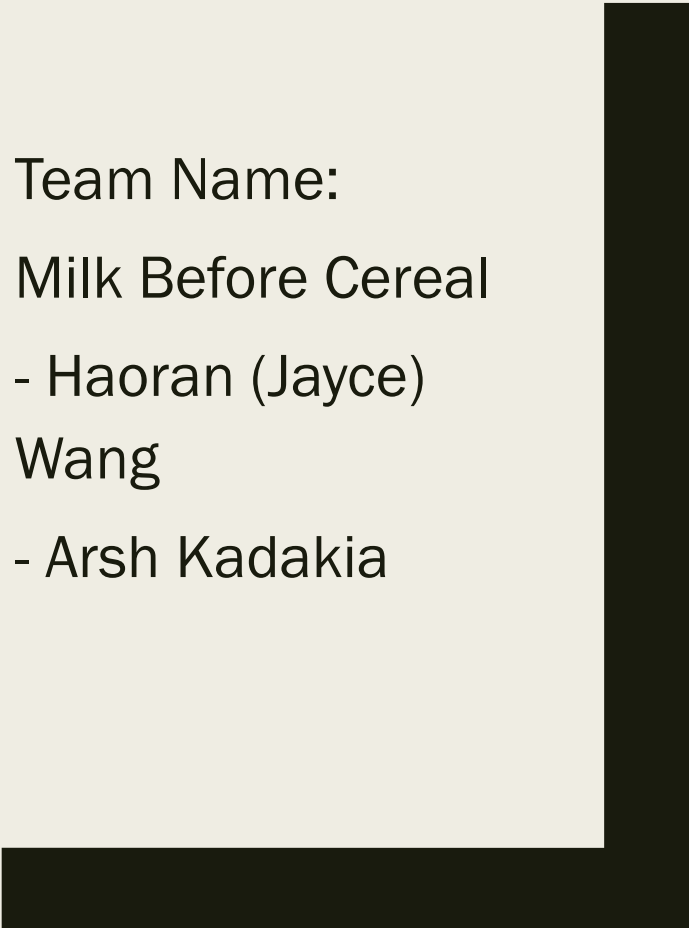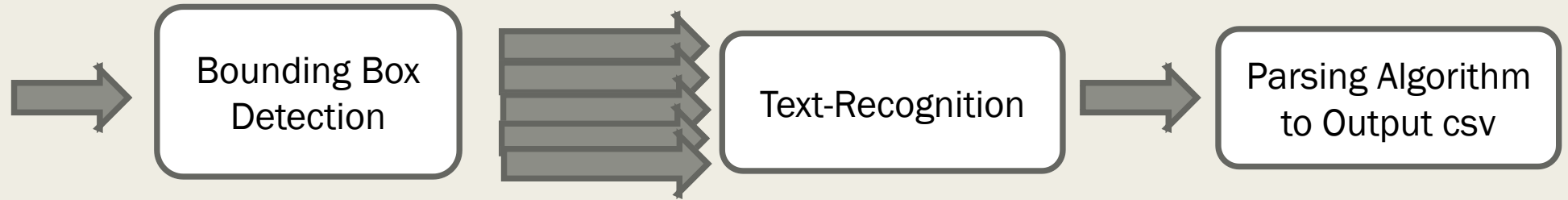
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High-Level Pipeline

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Bounding Box Detection	Text-Recognition	Parsing Algorithm to Output csv

Each recognized bounding box of each flyer is passed in for text-recognition

Words outputted via text-recognition is parsed and analyzed via patterns and logic statements to check for output categories

Bounding Box Detection

- Employed method is to detect the contours of densely packed words as rectangles once they are blurred and dilated using computer vision algorithms

- Alternate solution was to apply employed algorithm to collect training data for a MASK-RCNN network in hope of consistently detecting every entry on a flyer but failed due to lack of data

- Algorithm is biased toward rectangularly packed entries on the flyer

- Better results can be achieved through further tuning of parameters
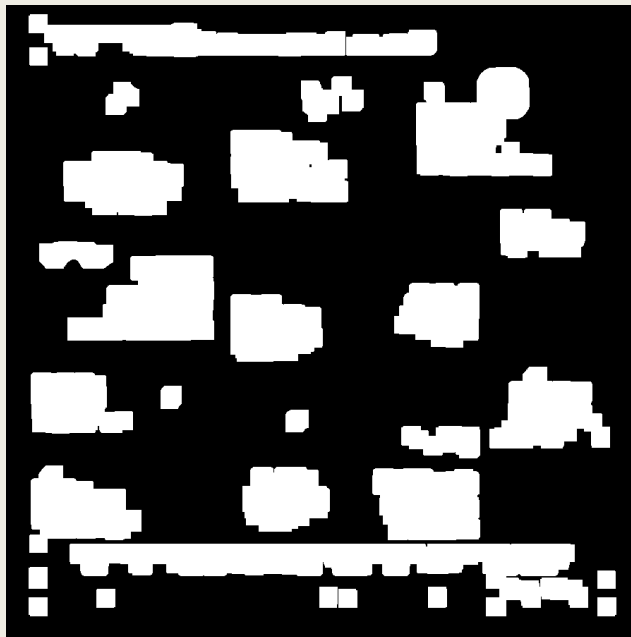
Text-Recognition

- Detected entries are passed into Google Cloud Vision API for text-recognition

- JSON output for each entry is sorted using a library of functions each responsible for existence of a output criteria

- Function library is used in a main pipeline file that completes the writing of the output csv file if an output criteria has been successfully detected

```python
def find_bboxes(image_name):

def coordinate_to_image(sample,image):

def string_from_google_vision(image):

def check_for_organic(annotations):

def check_for_unit(annotations):

def check_for_product(annotations,product_dictionary):

def unit_promo_price_check(annotations):

def save_per_unit_check(annotations):
```

Challenges We Faced

- Attempting to use deep learning for entry detection, we spent a lot of time developing the code and preprocessing required for transfer learning of the Mask-RCNN algorithm until it was not worth the investment due to the lack of data

- Having trouble deciding parameter configuration for computer vision algorithm as certain setups worked well for some photos but not others

- Bounding boxes sometimes did not cover all of the text, therefore text recognition api struggled to provide accurate results at times