IP'21 Apps Specs

4- Reading and Interpreting Statistical Chart

# Description

## Main Idea

Statistical charts are used to represent statistical data in visual form. One of the most used statistical charts is the **Bar chart** which presents categorical data with rectangular bars of heights proportional to the values that they represent. **Pie charts** are also used Sometimes to illustrate numerical proportions. In pie charts each proportion is represented by a slice from the circular shape.

Interpreting such charts visually may not produce an accurate results. And if there are a multiple number of charts then it will be exhaustive to interpret them one by one. In this application, you will interpret statistical charts and extract information from them programmatically. Given an image that contains a statistical chart and the color of each category (i.e. legend), your program should extract statistical information in a textual from.

|  |  |
| --- | --- |
| **Input** | **Output** |
|  | |  | | --- | | Food: 12.5% Hotel : 25% Gifts : 8% Travel : 35% Tickets: 12.5% Other : 7% | |
|  | |  | | --- | | Like gift: 65.6  Like jiff: 26.4  “gee eye eff”:6  Other: 2 | |

## Minimum Requirements

Generate a report summarizing chart information from pictures with:

1. A bar chart or a pie chart
2. Different legend positions
3. Legend is surrounded by a black border
4. Interpreting a bar chart with its max value appeared on a horizontal line on the y-axis

## Possible Add-ons (Bonuses)

1. Interpret bar chart of the same color bars (i.e. category under each bar – no legend)
2. Interpret pie chart with category inside each slice (i.e. no legend)
3. Interpret slightly rotated charts
4. Interpreting bar charts with any numbers and grids on the y-axis (display numbers and percentage for each category)
5. Interpreting stacked bar chart

# Suggested Search Tracks and Keywords

You may use some/all of the following keywords as a guide (not restricted to them):

1. Color-based segmentation
2. Hough transform
3. Text detection/segmentation
4. Region properties
5. Digits detection/recognition

# Test Images for Minimum Requirements

Case1: pie chart with legend in the top right corner.

Case2: bar chart with legend in the top right corner.

Case3: pie chart with legend at any position.

Case4: bar chart with legend at any position.

# Test Images for Bonuses

Case5: bar chart with the same color (category under each bar – no legend).

Case6: pie chart with category inside each slice (no legend).

Case7: A slightly rotated pie charts.

Case8: A bar chart with numbered y-axis with grid lines (find quantity and percentage).

Case9: A stacked bar charts.

# References

1. Textbook Ch. 6: Color Image Processing
2. Textbook Ch. 9: Morphological Image Processing
3. Textbook Ch.10: Image Segmentation
4. Textbook Ch. 11: Representation and Description