TestResults – Computer Vision Challenge

Background

TestResults is a platform for technology agnostic software test automation based on visual steering. Right now, TestResults is based on controls defined by the user and these controls support autonomous interactions, e.g., if you call the operation on Select on a control that is categorized as Dropdown the system will automatically identify if scrolling is required and autonomously scroll till it finds the element or decides that the element is not in the list.

The next iteration can auto-detect controls based on a single training image, i.e., you give the system an image of a button or a table and it can detect tables and button and buttons inside tables through the whole application.

Challenge

You implement the first version of the next iteration. You should be able to

1. Identify a table on the screen based on a given image that shows a partial table.
2. Return the boundaries of the table.
3. Be able to identify header boundaries within the table.
4. Be able to identify row & column boundaries within the table.
5. Be able to identify cell boundaries.

Given are two screenshots of two applications. The first application is SAP; the second application is a custom WEB application.

You can define the image required to identify the table yourself, but it must be a partial image (no template matching allowed). This image is like a prototype, which should include at least the header and the first two rows.

From the prototype you can extract features, like which kind of row/column separators do exist, what is the text size, how is the alignment, etc. You are free to define the features yourself or use machine learning (DL) to identify the features.

The solution must support different screen resolutions and zoom factors. The prototype defined on WEB shall only find the WEB table; the SAP prototype shall only find the SAP table.

Boundaries do not need to be pixel perfect, but good enough to interact with individual elements within table cells.

Technology Stack

You can use any ML tooling you require. It must be able to work on-prem, e.g., offline.
For image processing use OpenCV (in C#, use OpenCVSharp)

Core Requirements

Provide a console application that takes two arguments:

1. Screenshot to use (file path)
2. Partial image to use (file path)

The console application should generate the following output:

1. StdOut: Boundaries of the complete table in the screenshot
2. StdOut: Boundaries of header
3. An image in the working directory which is based on the screenshot that highlights:
    a. Complete table in red (rectangle)
    b. Header in green (rectangle)
    c. Rows in yellow (rectangle)
    d. Columns with straight strokes in black

Requires Deliverables

1. Complete Source Code
2. Generated output images for SAP and WEB
3. Documentation
    - README.md which describes your solution.

Questions and support

If you have any questions about requirements, technical clarifications, or need guidance on implementation approaches, please feel free to reach out via email. We are here to help ensure you demonstrate your skills effectively.

Good luck with the assessment! We are excited to see your approach to solving this challenge. We look forward to reviewing your solution and discussing your implementation choices.