Competition task 3:
Creating an application for detecting and locating colored objects

Task Objective: Create a Python application with a user interface that detects and locates objects of specific colors from images provided with the task. The program should use OpenCV, PIL, numpy, tkinter/customtkinter, or other libraries.
The files provided with the task are saved in jpg and png formats.

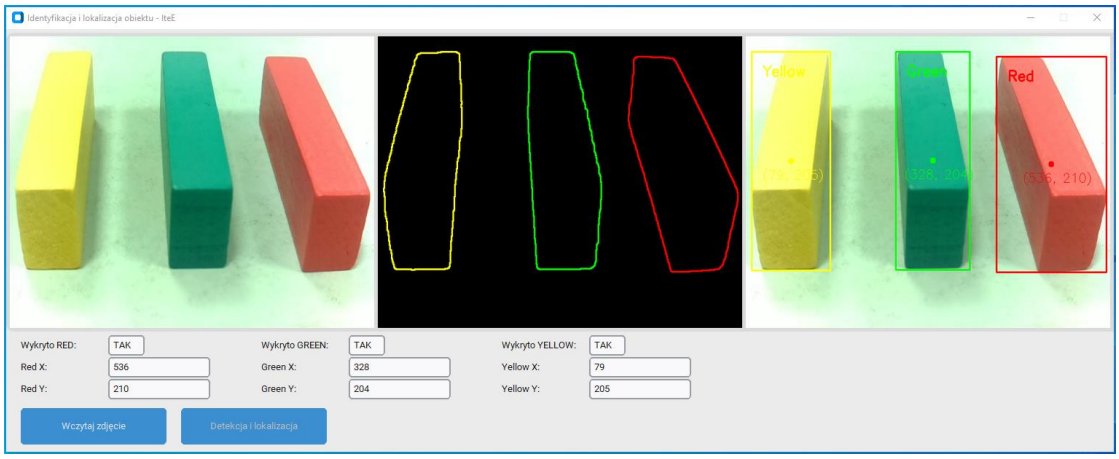

Fig. 1. Sample Python application

Task content:

1. **Color Detection:** Create a program that can detect objects with colors defined in the HSV range. The task is to detect the colors yellow, green, and red.
2. **Object localization:** The program should not only detect colors, but also locate objects by indicating their positions in the image.
3. **User Interface:** Design a simple yet functional user interface using tkinter/customtkinter that allows you to load images, display the processed image and the detection results.
4. **Documentation:** Participant should provide documentation of their code, explaining the key elements and operation of the program.

Evaluation criteria:

1. **Performance accuracy:** Accuracy of color detection and object location.
2. **Code quality:** Cleanliness, organization, and documentation of the source code.
3. **Interface functionality:** Intuitiveness, usability and aesthetics of the user interface.
4. **Innovation:** Creative approach to the problem and possible additional features that distinguish the project.

Additional guidelines:

- The program should be written in Python and use the listed libraries.
- The code should be readable and well commented.
- The evaluation will take into account both the technical aspects of the solution and its practical usability.