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«Developing a robot with computer vision for automating business
processes of the industrial complex»

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Problem statement

- One of the main problems with RPA is that if the work must be done through the virtual desktop interface, it will be impossible to get data about the elements of the graphical interface without using computer vision.
- The object of research is the automation of business processes of an industrial complex using computer vision.
- The purpose of the research is to apply computer vision methods to automate the business processes of an industrial complex and develop an appropriate software robot.



Task of research

- 1) Review and analysis of scientific and technical information and subject area;
- 2) selection of algorithms for searching for user interface elements on different operating systems and searching for images in images;
- 3) designing a robot with computer vision to automate business processes;
- 4) choice of application architecture;
- 5) creation of UML-models of the domain;
- 6) choice of software development tools;
- 7) implementation of algorithms;
- 8) software testing.



Solution methods

- The paper analyzes computer vision methods for recognizing user interface elements and text within these elements.
- NetCore platform and object-oriented programming language C# were chosen for implementation.
- Visual Studio Community 2019 was chosen as the IDE, since this development environment is free and has a wide range of development and debugging tools.
- The software implementation consists of several modules that implement functions for working with computer vision, native search, recording and playback of processes. Kenny's algorithms and pattern matching were used to implement computer vision. Tesseract OCR 4 version was chosen for text recognition in user interface elements.

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Conclusions

Results, implementation

- In addition, a cross-platform application that reproduces the business process using computer vision has been developed and tested.
- The application is implemented in the activities of the Doronichi industrial complex, one of the participants in the priority national project "development of the agro-industrial complex".
- The test results show that the selected computer vision methods will help automate the business processes of the industrial complex on any platforms with a virtual desktop interface.



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