formal specifications for valid API usage and allows reducing the size of the original test sets for such libraries without losing the specified testing efficiency characteristics. It uses a multi-level reward function that takes into account both the achieved branch coverage and the length of the generated scenario. The agent adapts to API calls without needing access to the source code of the tested library. The proposed method is implemented as part of the CIDER tool and tested on two open-source C++ libraries with different API types. With the help of the agent, scenarios were generated that demonstrate shorter length and higher coverage density compared to the original ones. For BitmapPlusPlus, the number of instructions in the test set was reduced by 2 times, and for Hjson – by 3 times, improving code coverage. Among the action selection strategies, the best results are demonstrated by the greedy QLG3 agent and the Boltzmann QLB2 agent. The results of the study demonstrate the promise of reinforcement learning approaches in TSO test set optimization tasks for complex systems with rich interfaces, such as C++ libraries.

METHOD FOR OPTICAL AND VISUAL INSPECTION OF AIRCRAFT STRUCTURAL ELEMENTS

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Ensuring high efficiency in the use of aircraft for various purposes is related, on the one hand (internal factors), to the normal operation of automated control and regulation systems, digital computers, and various types of elements, assemblies, units, products, etc., and on the other hand (external factors) with maintaining the integrity of aircraft structural elements to determine airworthiness. The tasks of aircraft maintenance and repair include servicing and restoring not only failed equipment, but also identified degradation processes (fatigue and corrosion).

Thus, the development of a method for optical and visual inspection of

aircraft structural elements is a pressing scientific task.

The report analyzes known methods of optical-visual inspection of aircraft structural elements, as well as their advantages and disadvantages. The proposed method of optical-visual inspection of aircraft structural elements is a relevant scientific task.

The method is based on the use of copter-type unmanned aerial vehicles (UAVs) that provide an overview of aircraft structural elements. By placing video cameras on the UAV in three directions, a three-dimensional view of the aircraft structural elements is provided without changing the horizontal position of the UAV body.

The proposed method allows for the timely detection of cracks, corrosion, and structural damage (destruction of structural elements) so that measures can be taken to eliminate the detected defects.

The use of flaw detection methods at various stages of aircraft operation provides, as the most important direction of diagnostics, monitoring of the development of acceptable material damage during aircraft operation and, on this basis, forecasting the overall performance of the aircraft.

METHOD FOR TRANSMITTING LARGE VOLUMES OF DATA OVER NETWORK COMMUNICATION CHANNELS BASED ON LASER RADIATION

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Data transfer is a key process that ensures information communication and interaction in various spheres of human activity. Modern information technologies, such as the Internet, social networks, etc., have significantly changed the ways and means of data transfer. They allow instant data transfer around the world and provide high-quality access to the necessary information.

Thus, information technologies improve and create both ways and methods of data (information) transmission and means for increasing the volume of transmitted data.

Thus, the development of a method for transmitting large volumes of data over network communication channels based on laser radiation is a relevant