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Genetic Algorithm for Placing Control Points in a Digital Device

D. V. Speranskiy

Dmitriy V. Speranskiy, ORCID: 0000-0002-6882-0297, Moscow University of Railway Engineering, 22/2, Chasovaja Str., Moscow, Russia, 125993, Speranskiy.dv@gmail.com

The article considers the problem of placing control points in a digital device in order to increase its controlability. The previously known methods for solving this problem were based on a preliminary analysis of the device topology (structure) for the estimation of such parameters as controllability, observability and testability. The corresponding indicators in many well-known systems for analyzing compliance were calculated using software tools. Carrying out such an analysis is a rather laborious process. In the proposed article, the solution of the problem of placing control points, which is one of the ways to increase the controllability, is based on a fundamentally different approach. This approach also involves the evaluation of the above-mentioned indicators of the device, but this estimate is related to the calculation of the amount of information delivered to various nodes of the device during the process of supplying random input sequences to it. This approach is less labor-intensive than the analysis of the topology (structure) of the digital device.

Key words: genetic algorithms, technical diagnostics, discrete devices, information approach.

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