

CLAIMS

1. Method for testing a software component implemented in a host system on the basis of one or more test campaigns, a test campaign comprising
5 computer test cases and being associated with input test data, the method being characterized in that it comprises the steps of:
- executing ~~(203)~~ the computer test cases of each test campaign for an operating time of said software component, which provides output test data associated with each test campaign;
 - 10 - determining ~~(205)~~ a reference operating model and a data partition on the basis of the input and output test data associated with each test campaign, ~~a~~ the reference operating model being determined by applying a machine learning algorithm to said input and output test data, a data partition being determined by applying a data partitioning algorithm to said input and output
15 test data;
 - running ~~(207)~~ said software component using input production run data, which provides output production run data;
 - determining an operating characteristic of said software component ~~(209)~~ on the basis of the reference operating models according to a comparison
20 between the input and output production run data and the data from the data partitions associated with said one or more test campaigns.
2. Method for testing a software component according to Claim 1, characterized in that said machine learning algorithm is a machine learning
25 algorithm chosen from a group comprising unsupervised clustering machine learning algorithms.
3. Method for testing a software component according to Claim 2, characterized in that said machine learning algorithm is a deep neural network.

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4. Method for testing a software component according to Claim 1, characterized in that said data partitioning algorithm is chosen from a group comprising the k-means algorithm, hierarchical clustering algorithms and expectation-maximization algorithms.

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5. Method for testing a software component according to Claim 1, characterized in that the set of data partitions associated with said one or more test campaigns corresponds to a domain of use of said software component, the input production run data and the output production run data being represented by an operating point of said software component, said step ~~(209)~~ of determining an operating characteristic of said software component comprising the operation of determining whether said operating point belongs to said domain of use and to a data partition.

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6. Method for testing a software component according to Claim ~~65~~, characterized in that said domain of use comprises at least one failure region, said operating characteristic being an operating anomaly of said software component if said operating point is within said at least one failure region or if said operating point does not belong to said domain of use.

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7. Method for testing a software component according to Claim ~~65~~, characterized in that said operating characteristic is a new functionality of the software component if said operating point belongs to said domain of use and does not belong to any of said one or more data partitions or to any of said at least one failure regions.

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8. Method for testing a software component according to Claim ~~65~~, characterized in that each data partition and each operating model associated with each test campaign corresponds to a given functionality of said software

component, said operating characteristic being said given functionality if said operating point belongs to the data partition corresponding to said functionality.

9. Method for testing a software component according to Claim 1,
5 characterized in that said software component is a free software item or a commercial off-the-shelf software item.

10. Method for testing a software component according to Claim 1,
10 characterized in that said computer test cases are defined according to an application of said host system.

11. Device ~~(100)~~ for testing a software component implemented in a host
system ~~(1000)~~ on the basis of one or more test campaigns, a test campaign
comprising computer test cases and being associated with input test data, the
15 device being characterized in that it comprises:

- a processing unit ~~(101)~~ configured for:
 - executing the computer test cases of each test campaign for an operating time of said software component, which provides output test data associated with each test campaign; and
 - 20 • determining a reference operating model and a data partition on the basis of the input and output test data associated with each test campaign, a reference operating model being determined by applying a machine learning algorithm to said input and output test data, a data partition being determined by applying a data partitioning algorithm to said input and output
- 25 test data;
- a test unit ~~(103)~~ configured for:
 - running said software component using input production run data, which provides output production run data;
 - determining an operating characteristic of said software component on the
 - 30 basis of the reference operating models according to a comparison between

the input and output production run data and the data from the data partitions associated with said one or more test campaigns.