

Claims

1. Method for assisting the verification and operational validation of an algorithm chain, said method comprising a sequence of steps comprising at least:

(a) capturing interface data and internal algorithm data of the algorithm chain once the algorithm chain is executed;

(b) creating queries to those captured interface and internal algorithm data and storing the queried data in a backup files;

(c) allowing a user to write operational rules that are used to automatically determine if there are any breaches of rules or if there are elements in the algorithm chain that need to be first verified by the user, wherein the step (c) further comprising allowing the user to indicate if a scenario took place in the algorithm chain without fault or which aspects in the algorithm chain are at fault based on his/her verification;

(d) learning the constraints and algorithm criteria of the algorithm chain by taking into accounts the verifications carried out by the user in the step (c) and the data as captured in step (a) and thereby identifying suspected problematic algorithm chain based on the learned constraints and algorithm criteria,

(e) automatically detecting bugs or operational problem in the algorithm chain using statistical learning means by carrying out a correlation of the data using statistical learning means in order to determine general rules of variations in algorithm outputs of the algorithm chain based on the data captured from the step (a), and sending a warning if a variation greater than a given threshold of an algorithm output compared with a predetermined output is detected.

2. Method according to claim 1, characterised in that step (d) further comprising:

analysing an operational structure of the algorithm chain and an associated code;

using a risk metric to quantify the risk associated with the algorithm chain especially when one or another sub-function or portion of the code of the algorithm chain is identified as a source of operational problems; and

presenting the identified suspected problematic algorithm chain to the user.

3. Method according to any of the preceding claims, characterised in that step (e) analyses the variation in algorithm results of the algorithm chain so as to detect, where necessary, discontinuities and abnormal variations.

4. Method according to any of the preceding claims, further comprises classifying suspected problematic algorithm chains as identified.

5. Method according to any of the preceding claims, further comprises defining metrics and displaying said metrics.

6. System for assisting the verification and operational validation of an algorithm chain, said system (1) comprising a set (9) of backup files in which data of the algorithm chain are stored, and at least the following modules, coordinated by an expert system:

- an module (2) for instrumenting the algorithm chain, automatically capturing data that include at least some of the following data: interface data and internal algorithm data of the algorithm chain, the instrumentation module (2) being configured to read the backup files and to create queries about the data contained in said backup files;

- a module (3) operatively coupled with a data input unit that allows a user to write operational rules, the written operational rules are used to determine if there are any breaches of rules or if there are elements in the algorithm chain that needs to be first verified by the user, wherein the module (3) is further configured so that it allows the user to indicate if a scenario took place in the algorithm chain without fault or which aspect in the algorithm chain are at fault based on his/her verification;

- a learning module (5) for modelling by learning the constraints and algorithm criteria of the algorithm chain, by taking into accounts the verifications carried out by the user from the module (3) and the data as captured from the module (2) and thereby identifying suspected problematic algorithm chain based on the learned constraints and algorithm criteria; and

- a module (7) for automatically detecting bugs or operational problems in the algorithm chain using statistical learning means in order to determine general rules of

variation in algorithm outputs of the algorithm chain based on the data captured from the module (2);

- a warning unit operatively coupled to the module (7) for sending a warning if a variation in the algorithm chain is greater than a given threshold of an algorithm output compared with a predetermined output is detected.

7. System according to claim 6, characterised in that it further comprises a unit (11) for displaying data from the instrumentation module (2).

8. System according to any of claims 6 to 7, characterised in that it further comprises a unit (19) for presenting the results from the module (7) for detecting bugs.

9. System according to any of claims 6 to 8 characterised in that it further comprises a module (17) for classifying suspected problematic algorithm chain as identified.

10. Assembly comprising an algorithm chain and a system (1) such as that defined in any of claims 6 to 9.