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(54) Title: ANOMALY DETECTION SYSTEM AND METHOD FOR AN INDUSTRIAL CONTROL SYSTEM

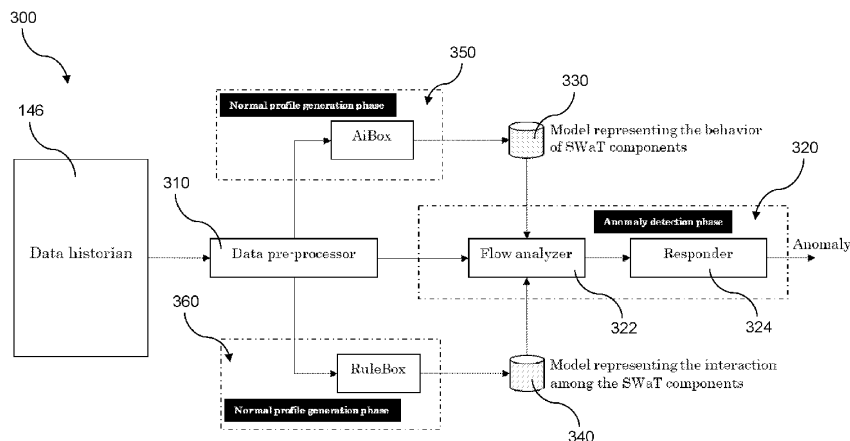


Figure 4A

(57) Abstract: The present disclosure generally relates to a system (300) and method detecting anomalies in an industrial control system (100). The anomaly detection method comprises: determining state variables of the industrial control system (100) based on a system design (312) of the industrial control system (100); determining invariants governing the state variables based on the system design (312); receiving historical measurement data of the state variables of each invariant from the industrial control system (100); constructing a set of behavioural models (330,340) for each invariant using a set of machine learning algorithms and the historical measurement data of the respective state variables of the invariant, the behavioural models (330,340) representing normal behaviour of the respective state variables; predicting measurement data of the state variables of each invariant using the behavioural models and the historical measurement data of the respective state variables; receiving current measurement data of the state variables during operation of the industrial control system (100); and detecting the anomalies based on deviations between the current measurement data and predicted measurement data of the state variables of each invariant.

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