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**Agrawal et al.**

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(45) **Date of Patent: Jan. 31, 2012**

(54) **METHOD AND SYSTEM FOR DETECTING INTRUSIVE ANOMALOUS USE OF A SOFTWARE SYSTEM USING MULTIPLE DETECTION ALGORITHMS**

(75) Inventors: **Subhash C. Agrawal**, Boxboro, MA (US); **Scott M. Wimer**, Burlington, MA (US); **Jonathan H. Young**, Newton, MA (US)

(73) Assignee: **Reflex Systems, LLC**, Atlanta, GA (US)

( * ) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 1844 days.

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(51) **Int. Cl.**
***G06F 21/00*** (2006.01)

(52) **U.S. Cl.** ..... **726/23**

(58) **Field of Classification Search** ..... 726/23
See application file for complete search history.

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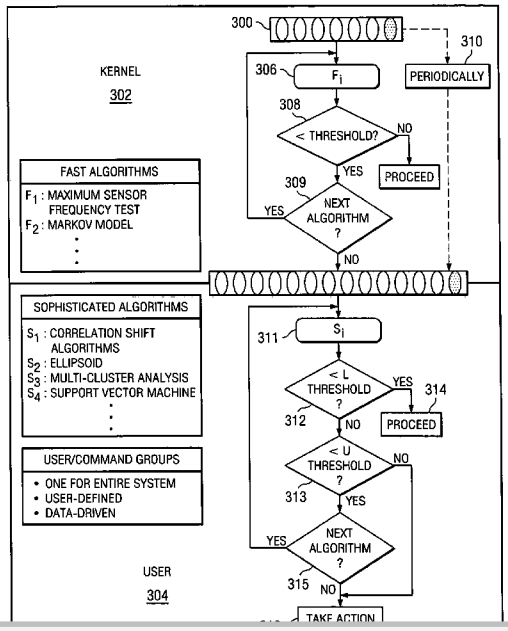
*Primary Examiner* — Gilberto Barron, Jr.
*Assistant Examiner* — Virginia T Ho
(74) *Attorney, Agent, or Firm* — David H. Judson

(57) **ABSTRACT**

A target software system is instrumented to generate behavior data representing a current observation or observation aggregate. A method then determines whether the current observation or observation aggregate warrants a second level examination; preferably, this determination is made by processing the current observation or observation aggregate through a first level detection algorithm that provides a provisional indication of a possible intrusion. If executing the first level detection algorithm indicates that the current observation or observation aggregate warrants a second level examination, the method continues by processing the current observation or observation aggregate through at least one second level detection algorithms to provide a more definite, fine grain indication of a possible intrusion. Multiple algorithms may be executed together within a single examination level, with the individual results then analyzed to obtain a composite result or output indicative of intrusive or anomalous behavior.

**23 Claims, 4 Drawing Sheets**



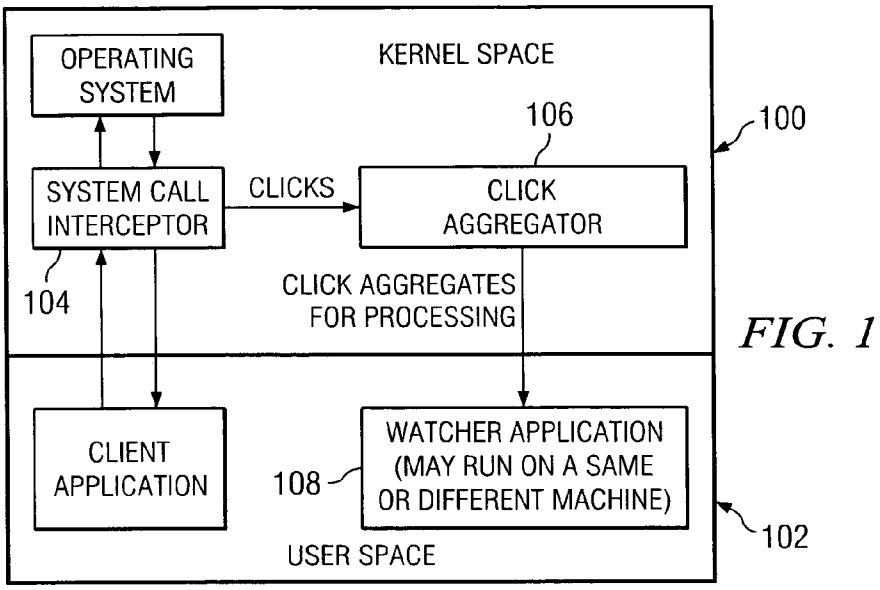



FIG. 1

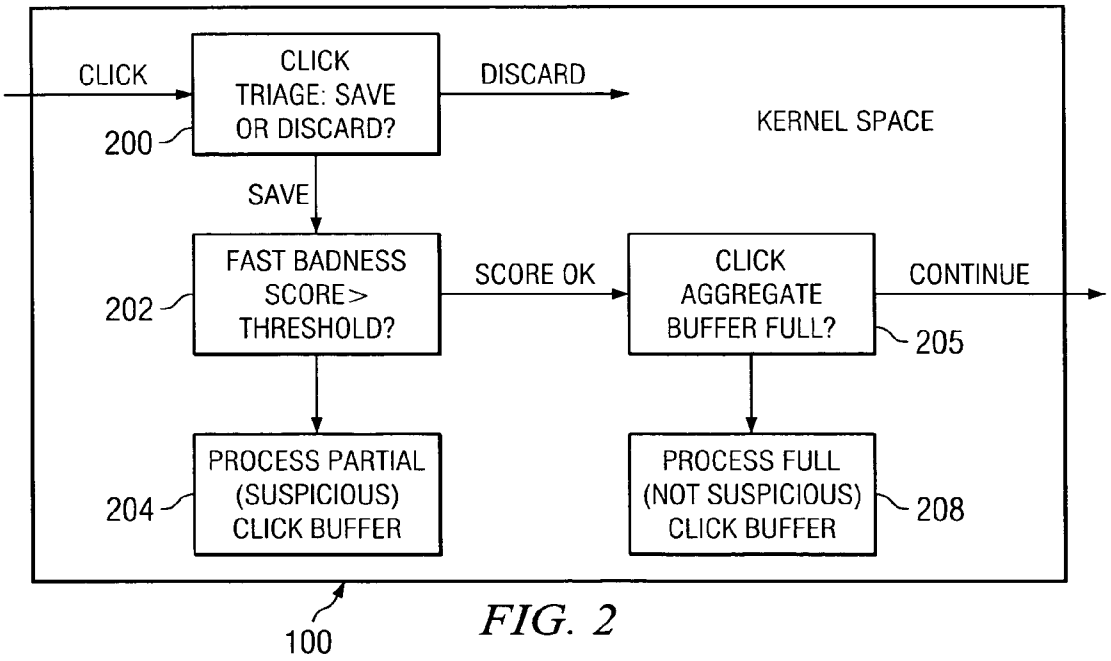



FIG. 2

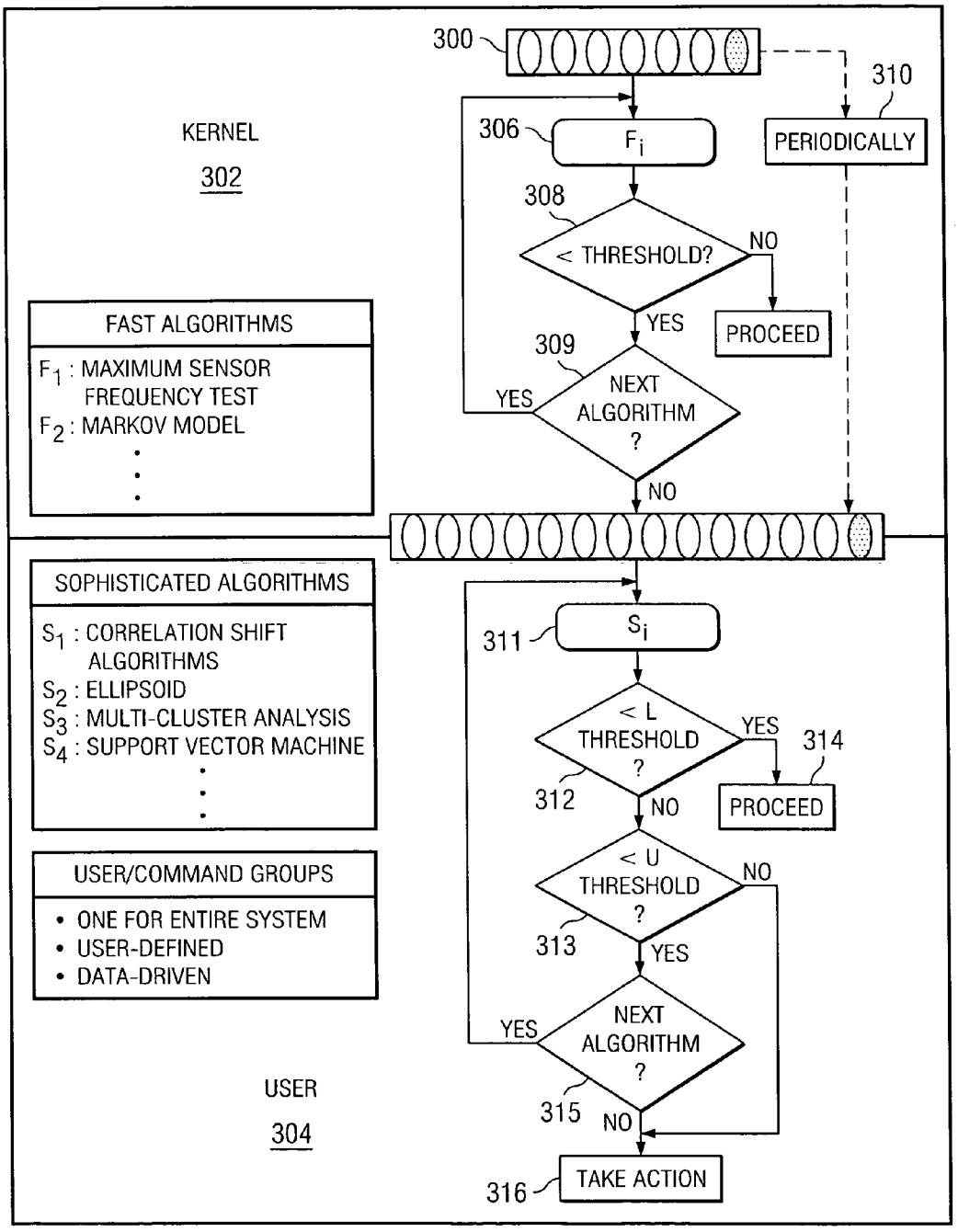



*FIG. 3*

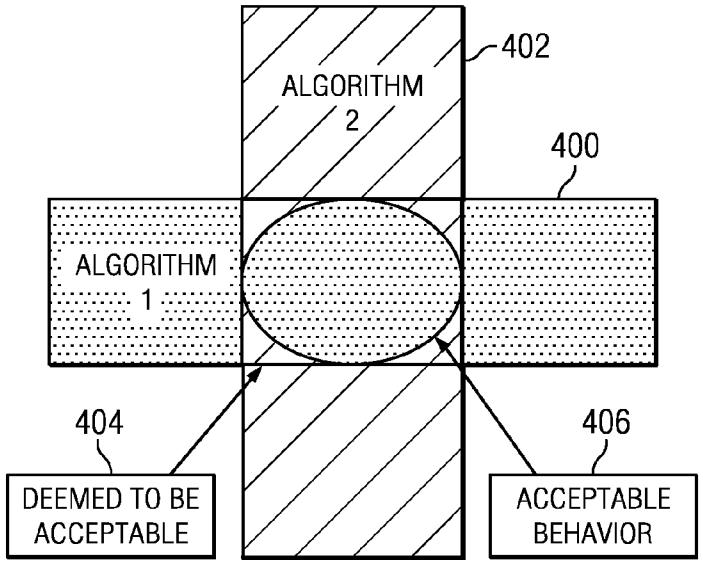



FIG. 4

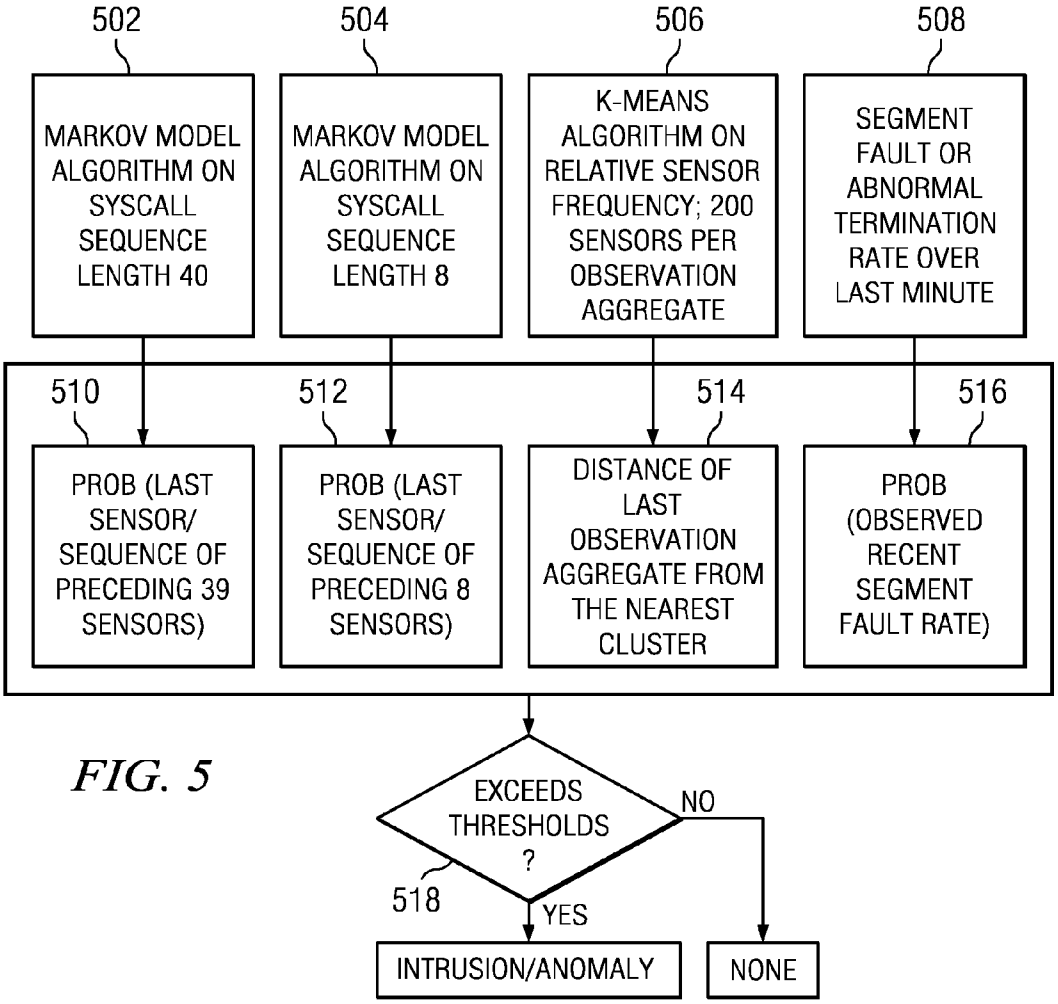



FIG. 5

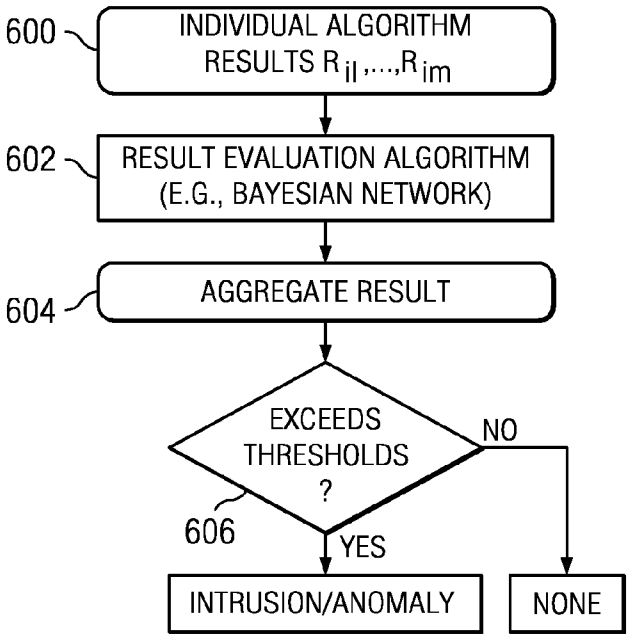



*FIG. 6*

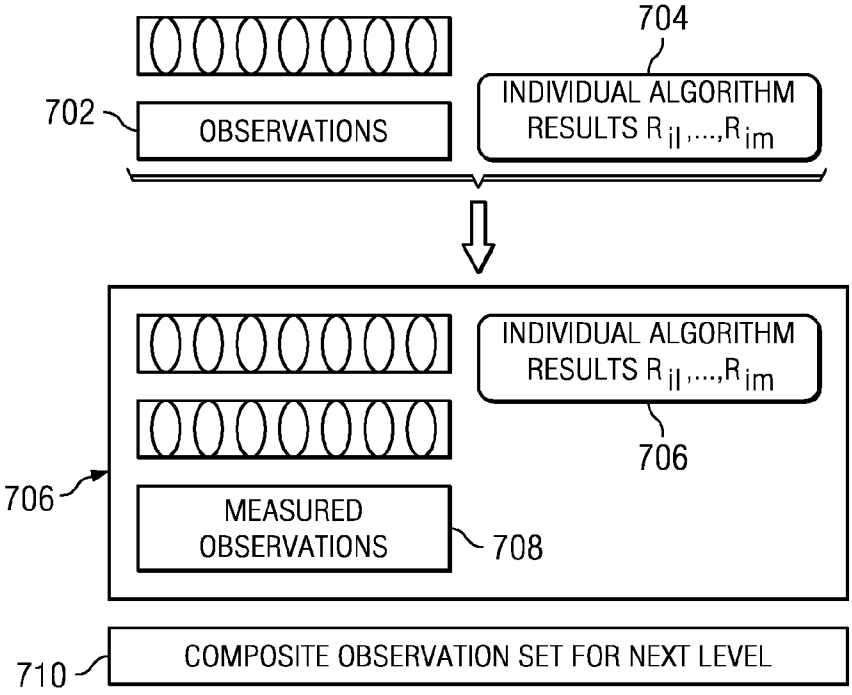



*FIG. 7*

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