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(54) Title: METHOD AND APPARATUS FOR INTELLIGENT CAPTURE OF DOCUMENT OBJECT MODEL EVENTS

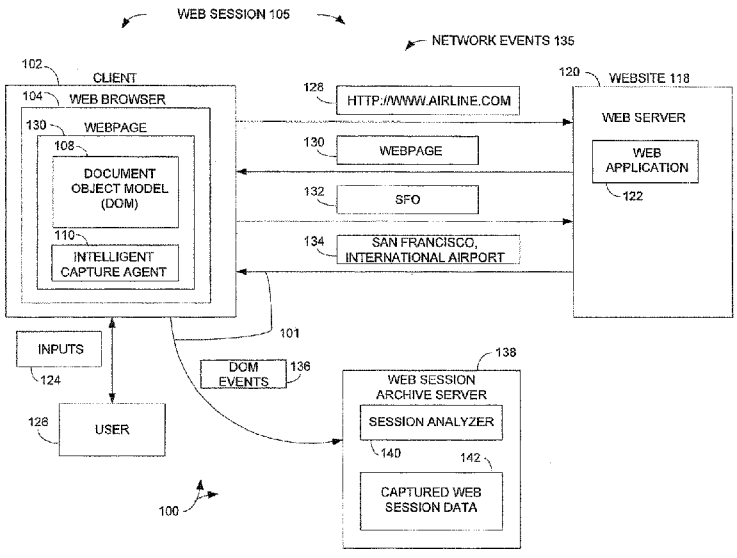

FIG. 1

(57) Abstract: A monitoring system intelligently captures Document Object Model (DOM) events. The DOM events may provide state information that may not usually be captured during a web session. To reduce processing bandwidth, content identifiers may be used to represent some DOM events. Checkpoints may be identified during the web session and a current state of the webpage may be captured to provide replay synchronization. Different data may be captured based on a sequence and timing of the DOM events during the original web session. Data exchanged with third party websites also may be selectively captured to provide a more through simulation of the original web session.

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CLAIMS

1. A method, comprising:

identifying, by a processing device, a first set of webpage items previously known to be displayed within a webpage;

identifying, by the processing device, content identifiers associated with the first set of webpage items

monitoring, by the processing device, for changes in the webpage during a web session;

identifying, by the processing device, some of the changes in the webpage during the web session that include some of the first set of webpage items;

identifying, by the processing device, some of the changes in the webpage during the web session that include a second set of webpage items not previously known to be displayed within the web page; and

capturing, by the processing device, the webpage by archiving the content identifiers associated with the first set of webpage items as a first part of the webpage and archiving the second set of webpage items to the archive server as a second part of the webpage.

2. The method of claim 1, wherein the changes in the webpage comprise Document Object Model (DOM) events.

3. The method of claim 1, further comprising:

configuring an agent to monitor for the changes in the webpage; and

configuring the agent to send the content identifiers associated with the first set of webpage items and the second set of webpage items to an archive server.

4. The method of claim 1, further comprising:

capturing Document Object Model (DOM) items for the second set of webpage items; and

capturing the webpage by combining the DOM items with the content identifiers.

5. The method of claim 1, further comprising:

identifying actions, time stamps, and locations associated with the content identifiers; and

archiving the actions, time stamps, and locations with the associated content identifiers.

6. The method of claim 1 further comprising:

using Document Object Model (DOM) subtrees to identify the changes in the webpage;

identifying DOM values in the DOM subtrees associated with the changes in the webpage; and

using the content identifiers to represent some of the DOM values.

7. The method of claim 1 further comprising using a Domsubtree Modified JavaScript message to identify the changes in the webpage.

8. The method of claim 1, further comprising:

identifying a sequence and timing of Document Object Model (DOM) events for the web session; and

determining which of the changes in the webpage to capture and archive based on the sequence and timing of the DOM events.

9. The method of claim 1, further comprising:

identifying metadata for the webpage; and

determining which of the changes in the webpage to capture and archive based on the metadata for the webpage.

10. The method of claim 1, further comprising:

identifying a checkpoint event;

capturing a Document Object Model (DOM) state for the entire webpage in response to identifying the checkpoint event; and

capturing only changes in the DOM state after the checkpoint event.

11. The method of claim 10, wherein identifying the checkpoint event comprises:

identifying a pre-determined sequence of events for the web session;

monitoring an actual sequence of events for the web session; and

capturing the DOM state for the entire web page based on a comparison of the pre-determined sequence of events for the web session with the actual sequence of events for the web session.

12. The method of claim 1, further comprising:
identifying network events for the web session;
identifying websites associated with the network events; and
capturing the changes in the webpage based on the websites associated with the network events.

13. The method of claim 12, wherein the websites comprise a primary website providing the webpage and third party websites providing content for the webpage.

14. An apparatus, comprising:
logic circuitry configured to:
monitor a Document Object Model (DOM) for a webpage;
detect changes in the DOM for the webpage;
locate subtrees in the DOM containing the changes in the DOM;
identify values in the subtrees for the changes in the DOM; and
capturing the values as part of a captured web session

15. The apparatus of claim 14, wherein the logic circuit is further configured to:
identify actions, times, and locations associated with the values; and
archive the actions, times, and locations with the associated values.

16. The apparatus of claim 14 wherein the logic circuitry is further configured to use a DOMSUBTREE MODIFIED JavaScript object to identify the values in the subtrees for the changes in the DOM.

17. The apparatus of claim 14, wherein the logic circuitry is further configured to:
identify a sequence of events for the web session; and
determine which changes in the DOM to capture based on the sequence of events for the web session.

18. The apparatus of claim 14, wherein the logic circuitry is further configured to:

identify a checkpoint event for the web session; and

capture a DOM state for the webpage in response to identifying the checkpoint event.

19. The apparatus of claim 14, wherein the logic circuitry is further configured to:

identify the changes in the DOM that can be represented by associated content identifiers; and

capture the content identifiers as part of the captured web session.

20. The method of claim 19, wherein the logic circuitry is further configured to:

identify the changes in the DOM that cannot be represented by associated content identifiers;

capture content from the webpage for the changes in the DOM that cannot be represented by associated content identifiers; and

combine the content from the webpage with the content identifiers as the captured web session.

21. The apparatus of claim 14, wherein the logic circuitry is further configured to:

monitor DOM events for an original web session;

send the DOM events to a session analyzer;

receive a control message back from session analyzer, wherein the control message is based on the DOM events; and

capture the changes in the DOM based on the control message.

22. A method, comprising:

receiving, by a processing device, a webpage captured from a web session;

receiving, by the processing device, Document Object Model (DOM) changes in the webpage from the web session; and

archiving, by the processing device, the webpage and the DOM changes for subsequent replaying of the web session.

23. The method of claim 22, further comprising:

receiving content identifiers associated with some of the DOM changes; and

archiving the content identifiers instead of the associated DOM changes.

24. The method of claim 22, further comprising:
monitoring DOM events during the web session;
identifying which DOM changes in the webpage to capture based on the DOM events; and
sending a control message directing an agent to capture the identified DOM changes.

25. The method of claim 22, further comprising:
receiving metadata for the webpage;
identifying which DOM changes to in the webpage to capture based on the metadata; and
sending control message directing an agent to capture the identified DOM changes.

26. The method of claim 22, further comprising:
receiving actions, timestamps, and locations associated with the DOM changes;
archiving the actions, timestamps, and locations associated with the DOM changes for subsequent replaying of the web session.

27. The method of claim 22, further comprising:
monitoring DOM events during the web session;
identifying a checkpoint based on the DOM events; and
initiating capture of an entire state of the webpage in response to identifying the checkpoint.

28. The method of claim 22, further comprising:
sending an artificial stimulation of the DOM to the webpage;
receiving DOM events in response to the artificial simulation of the DOM; and
initiating capture of additional DOM events or generating a status message in response to the received DOM events.

29. A method of claim 14, wherein the logic circuitry is further configured to:
identify browser requests to third party websites;

filter payloads and Uniform Resource Locators for the browser requests;

log the filtered browser requests; and

transmit the logged browser requests to an archive server to provide context to the DOM changes identified in the web session.