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**Kozyrczak et al.**

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(54) **REPRESENTING USER BEHAVIOR INFORMATION**

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(\*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 1278 days.

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**Related U.S. Application Data**

(63) Continuation of application No. 11/107,409, filed on Apr. 14, 2005, now abandoned.

(51) **Int. Cl.**  
**G06F 17/30** (2006.01)

(52) **U.S. Cl.** ..... **707/790**

(58) **Field of Classification Search** ..... 707/1-4,  
707/100-102, 104.1

See application file for complete search history.

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(57) **ABSTRACT**

A facility for analyzing user behavior information is described. The facility receives a stream of user behavior information. The facility augments a representation of user behavior in accordance with the received stream of user behavior information. The representation augmented by the facility is a sparse matrix of user behavior facts. The facility analyzes the sparse matrix to obtain an analysis result for the received stream of user behavior.

**23 Claims, 6 Drawing Sheets**

**Conceptual View Table**

action	request page in electronics category	use loan calculator	request breaking news page	perform shopping checkout
user name	4/4/05 5 occurrences			4/1/05 1 occurrence
ned@hotmail.com			3/23/05 2 occurrences	
jean@yahoo.com		4/6/05 11 occurrences		4/6/05 1 occurrence
art@aol.com				