SYSTEMS AND METHODS FOR ELECTRONIC FRAUD DETECTION AND PREVENTION

Abstract: A non-transitory computer readable medium storing instructions for performing a secure transaction is provided. The instructions, when executed by at least one processor, cause the at least one processor to perform operations including harvesting, at a mobile device, activity data indicative of various diverse activities of a user of the mobile device; transmitting to a remote server, from the mobile device, the activity data harvested from the mobile device in order to enable the remote server to generate a behavioral profile of the user of the mobile device based on the harvested activity data; receiving at the mobile device, from the server, the behavioral profile; storing the behavioral profile locally on the mobile device; and, determining, on the mobile device, whether to authorize a requested financial transaction based on a comparison of data associated with the requested financial transaction and data associated with the behavioral profile.
INTERNATIONAL SEARCH REPORT

International application No. PCT/IB16/01832

A. CLASSIFICATION OF SUBJECT MATTER
IPC - G06F21/31; G06Q20/40; H04W1/06, 12/12 (2017.01)
CPC - G06F11/30; G06Q20/401 6, 30/0609; H04W1/06

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
See Search History document.

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
See Search History document.

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
See Search History document.

C. DOCUMENTS CONSIDERED TO BE RELEVANT

<table>
<thead>
<tr>
<th>Category</th>
<th>Citation of document, with indication, where appropriate, of the relevant passages</th>
<th>Relevant to claim No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Y</td>
<td>US 2015/0039513 [A1] (BRIGHTERON, INC.) 05 February 2015; figures 1, 2; paragraphs 0042, 0043, 0046, 0048, 0050, 0067, 0078, 0079; claims 3, 8</td>
<td>1-39</td>
</tr>
<tr>
<td>Y</td>
<td>WO 2014/022842 [A1] (ALCATEL LUCENT) 06 March 2014; abstract; paragraphs 0055-0059; figures 1, 2</td>
<td>1-39</td>
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Further documents are listed in the continuation of Box C.

Date of the actual completion of the international search: 11 May 2017 (11.05.2017)

Date of mailing of the international search report: 06 JUN 2017

Name and mailing address of the ISA/Authorized officer
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Form PCT/ISA/210 (second sheet) (January 2015)
INTERNATIONAL SEARCH REPORT

International application No.
PCT/IB16/01832

Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1.☐ Claims Nos.: because they relate to subject matter not required to be searched by this Authority, namely:

2.☐ Claims Nos.: because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

3.☐ Claims Nos.: because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1. In order for all inventions to be examined, the appropriate additional examination fee must be paid.

Group I: Claims 1-39 are directed towards harvesting activity data.
Group II: Claims 40-54 are directed towards a general population attribute, a fraud ratio attribute, and a personal history attribute.
Group III: Claims 55-66 are directed towards a set of fall-back rules.
Group IV: Claims 67-84 are directed towards a set of suspected fraud rules for use.
Group V: Claims 85-99 are directed towards updating behavioral profiles.
Group VI: Claims 100-120 are directed towards a merchant profile.

...Continued Within the Next Supplemental Box...

1.☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.

2.☐ As all searchable claims could be searched without effort justifying additional fees, this Authority did not invite payment of additional fees.

3.☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:

4.☒ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Group I: Claims 1-39

Remark on Protest

☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.

☒ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.

☒ No protest accompanied the payment of additional search fees.

Form PCT/ISA/2 10 (continuation of first sheet (2)) (January 2015)
The inventions listed as Groups I-VI do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons:

The special technical features of Group I include at least harvesting, at a mobile device, activity data indicative of various diverse activities of a user of the mobile device; and transmitting to a remote server, from the mobile device, the activity data harvested from the mobile device in order to enable the remote server, which are not present in Groups II-VI.

The special technical features of Group II include at least a general population attribute, a fraud ratio attribute, and a personal history attribute; wherein the general population attribute is associated with financial transactions conducted by a general population of users; wherein the fraud ratio attribute is associated with a prevalence of fraud among the general population of users; and wherein the personal history attribute is associated with the user's history of financial transactions, which are not present in Groups I and III-VI.

The special technical features of Group III include at least a set of fall-back rules for use when insufficient information is contained in the behavioral profile to authorize a financial transaction, which are not present in Groups I-III and IV-VI.

The special technical features of Group IV include at least a set of suspected fraud rules for use when, based on application of the behavioral profile, fraud is suspected; and invoking at least one of the suspected fraud rules when fraud is suspected, wherein the invoked suspected fraud rule prompts the user to provide further information, which are not present in Groups I-III and V-VI.

The special technical features of Group V include at least receiving from one of the plurality of mobile devices, an information about a fraudulent transaction; updating the plurality of behavioral profiles based on the received information about the fraudulent transaction; and transmitting to the mobile devices updated behavioral profile information that adjusts each of the plurality of mobile behavioral profiles to account for the information received about the fraudulent transaction, which are not present in Groups IV and VI.

The special technical features of Group VI include at least a merchant profile, wherein the merchant profile includes at least one merchant determined to be likely patronized by a user of the mobile device, and a risk of fraud based on the merchant profile and the transaction data, which are not present in Groups I-V.

The common technical features shared by Groups I-VI are a non-transitory computer readable medium storing instructions that, when executed by at least one processor, cause the at least one processor to perform operations on a mobile device, comprising: determining whether to authorize a requested financial transaction based on a behavioral profile without approval from another source.

However, these common features are previously disclosed by US 2014/0164178 A1 (ADJAOUTE). Adjoute discloses a non-transitory computer readable medium storing instructions that, when executed by at least one processor, cause the at least one processor to perform operations on a mobile device (network server comprising a processor, database, and memory including instructions that cause the server to allow transactions with particular users and their device (mobile device); Abstract and claim 8), comprising: determining whether to authorize a requested financial transaction based on a behavioral profile without approval from another source (analyzing webpage click navigation behaviors each of device visiting their webpages by collecting and maintaining comprehensive dossiers of device ID's, and the corresponding website (without approval from another source) deciding whether to allow a proposed transaction to be concluded; Abstract para [0056]).

Since the common technical features are previously disclosed by the Adjoute reference, these common features are not special and so Groups I-VI lack unity.