

DETERMINING IMPLICIT TRANSACTION CONSENT BASED ON BIOMETRIC DATA AND ASSOCIATED CONTEXT DATA

BACKGROUND

[0001] Modern technology provides users with options for how to complete transactions at merchants. In particular, personal computing devices, such as smart phones, tablets, or wearable computing devices, provide payment applications that enable users to complete transactions without the use of cash or a physical credit or debit card. The use of such payment applications typically requires a link to an account (e.g., a bank account, a credit account, etc.). During a transaction, in order to protect a user's identity and/or account from fraudulent activity, a user is required to provide both authentication of the user's identity and explicit consent to complete the transaction. The authentication may be provided through the use of passwords, personal identification numbers (PINs), or the like, while consent is typically provided via prompt that the user must answer to authorize the transaction. Methods of consent to transactions may differ between different merchants and/or merchant locations, which may result in a confusing or frustrating user experience each time the user makes a purchase. Further, transactions at points of sale at merchants may be slowed by the authentication and consent steps of the process.

SUMMARY

[0002] This Summary is provided to introduce a selection of concepts in a simplified form that are further described below in the Detailed Description. This Summary is not intended to identify key features or essential features of the claimed subject matter, nor is it intended to be used as an aid in determining the scope of the claimed subject matter.

[0003] In a first aspect, there is provided a system for determining implicit consent for a transaction from a user, the system comprising: at least one processor; at least one memory comprising computer program code, the at least one memory and computer program code configured to, with the at least one processor, cause the at least one processor to: receive a request to complete the transaction; using a biometric interface, automatically collect biometric data associated with the user, the biometric interface including a skin contact interface comprising electrodes in contact with skin of the user that detect conductance of the skin between the electrodes to collect biometric data; receive context data including one or more of repeated transaction information of the user and transaction data of the user associated with recently collected biometric data;

in response to the request to complete the transaction, applying consent rules to the biometric data and the context data to generate weighted data values; upon the generated weighted data values satisfying one or more consent thresholds, automatically determine that implicit consent of the user for authorization of the transaction is available from the user, without obtaining explicit consent from the user; and based on the automatically determined implicit consent and an authenticated identity of the user, authorize the transaction for completion without action being required by the user to provide consent to authorize the transaction. According to another aspect, there is provided a computerized method for determining implicit consent for a transaction from a user by a wearable computing device of the user, the method comprising:

receiving a request to complete the transaction; automatically collecting biometric data associated with the user using a biometric interface, the biometric interface including a skin contact interface comprising electrodes in contact with skin of the user that detect conductance of the skin between the electrodes to collect biometric data; receiving context data including one or more of repeated transaction information of the user and transaction data of the user associated with recently collected biometric data; in response to the request to complete the transaction, apply consent rules to the biometric data and the context data to generate weighted data values; upon the generated weighted data values satisfying one or more consent thresholds, automatically determining that implicit consent of the user for authorization of the transaction is available from the user, without obtaining explicit consent from the user; and based on the automatically determined implicit consent and an authenticated identity of the user, authorizing the transaction for completion without action being required by the user to provide consent to authorize the transaction. In another aspect, there is provided or more computer storage media having computer-executable instructions for determining implicit consent to a transaction from a user that, upon execution by a processor, cause the processor to at least: receive a request to complete the transaction; automatically collect, by a wearable computing device of the user, biometric data associated with the user using a biometric interface, the biometric interface including a skin contact interface comprising electrodes in contact with skin of the user that detect conductance of the skin between the electrodes to collect biometric data; receive, by the wearable computing device, context data including one or more of repeated transaction information of the user and transaction data of the user associated with recently collected biometric data; in response to the request to complete the transaction, apply consent rules to the biometric data and the context data to generate, by the wearable computing device, weighted data values; upon the generated weighted data values satisfying one or more consent thresholds, automatically determine, by the wearable computing device, that implicit consent of the user for authorization of the transaction from the user is available, without obtaining explicit consent from the user; and based on the automatically determined implicit consent and an authenticated identity of the user, authorize the transaction for completion without action being required by the user to provide consent to authorize the transaction. A computerized method for determining implicit consent for a transaction from a user by a wearable computing device of the user is described. The method comprises receiving a request to complete the transaction, collecting biometric data

associated with the user, and receiving context data associated with the biometric data. In response to the request to complete the transaction, weighted values of the biometric data and the context data are generated based on defined consent rules. Upon the generated weighted values satisfying one or more consent thresholds, implicit consent is determined for the transaction from the user, whereby completion of the transaction is enabled.

Claims

1. A system for determining implicit consent for a transaction from a user, the system comprising:
at least one processor;
at least one memory comprising computer program code, the at least one memory and computer program code configured to, with the at least one processor, cause the at least one processor to:
receive a request to complete the transaction;
using a biometric interface, automatically collect biometric data associated with the user, the biometric interface including a skin contact interface comprising electrodes in contact with skin of the user that detect conductance of the skin between the electrodes to collect biometric data;
receive context data including one or more of repeated transaction information of the user and transaction data of the user associated with recently collected biometric data;
in response to the request to complete the transaction, applying consent rules to the biometric data and the context data to generate weighted data values;
upon the generated weighted data values satisfying one or more consent thresholds, automatically determine that implicit consent of the user for authorization of the transaction is available from the user, without obtaining explicit consent from the user; and
based on the automatically determined implicit consent and an authenticated identity of the user, authorize the transaction for completion without action being required by the user to provide consent to authorize the transaction.
2. The system of claim 1, wherein the biometric data includes a galvanic skin response and a heart rate, and generating the weighted data values includes determining whether values of the galvanic skin response and the heart rate are normal or abnormal and, upon determining that at least one value of the galvanic skin response or the heart rate is abnormal, generating at least one weighted data value that does not support the implicit consent.
3. The system of claim 1, wherein satisfying one or more consent thresholds includes determining whether a quantity of biometric data values exceeds a defined value, and upon the quantity of biometric data values not exceeding the defined value, withholding the implicit consent.
4. The system of claim 1, wherein the biometric data includes at least one of pulse data, heart rate data, or galvanic skin response data.
5. The system of claim 1, wherein the authenticated identity of the user is based on persistent authentication for a period of time associated with a wearable computing device being worn by the user, the persistent authentication for the period of time being determined based on the user continuing to wear the wearable computing device for the period of time.
6. The system of claim 1, wherein the at least one memory and computer program code are configured to, with the at least one processor, further cause the at least one processor to:
obtain feedback from the user based on the determined implicit consent, wherein the feedback is positive if the determined implicit consent was accurate and the feedback is negative if the determined implicit consent was inaccurate; and
upon determining that the feedback is positive, adjust the consent rules to reinforce determination of the implicit consent based on the consent rules, and upon determining that the feedback is negative, adjust the consent

rules to improve the determination of the implicit consent based on the consent rules for use in determining subsequent implicit consent for a transaction.

7. The system of claim 1, the at least one memory and computer program code configured to, with the at least one processor, further cause the at least one processor to prompt the user for explicit consent to the transaction upon the generated weighted data values failing to satisfy one or more consent thresholds; and upon the user providing the explicit consent, adjust the consent rules such that applying the adjusted consent rules to the biometric data and the context data results in generation of larger weighted data values that satisfy the one or more consent thresholds.

8. The system of claim 1, wherein the consent rules determine a weight to be applied to the biometric data based on the context data.

9. The system of claim 1, wherein the weighted data values are based on a range associated with biometric data and values of the biometric data fall within the range.

10. A computerized method for determining implicit consent for a transaction from a user by a wearable computing device of the user, the method comprising:
receiving a request to complete the transaction;
automatically collecting biometric data associated with the user using a biometric interface, the biometric interface including a skin contact interface comprising electrodes in contact with skin of the user that detect conductance of the skin between the electrodes to collect biometric data;
receiving context data including one or more of repeated transaction information of the user and transaction data of the user associated with recently collected biometric data;
in response to the request to complete the transaction, apply consent rules to the biometric data and the context data to generate weighted data values;
upon the generated weighted data values satisfying one or more consent thresholds, automatically determining that implicit consent of the user for authorization of the transaction is available from the user, without obtaining explicit consent from the user; and
based on the automatically determined implicit consent and an authenticated identity of the user, authorizing the transaction for completion without action being required by the user to provide consent to authorize the transaction.

11. The computerized method of claim 10, wherein the biometric data includes a galvanic skin response and a heart rate, and generating the weighted data values includes determining whether values of the galvanic skin response and the heart rate are normal or abnormal and, upon determining that at least one value of the galvanic skin response or the heart rate is abnormal, generating at least one weighted data value that does not support the implicit consent.

12. The computerized method of claim 10, wherein satisfying one or more consent thresholds includes determining whether a quantity of biometric data values exceeds a defined value, and upon the quantity of biometric data values not exceeding the defined value, withholding the implicit consent.

13. The computerized method of claim 10, further comprising:
obtaining feedback from the user based on the determined implicit consent, wherein the feedback is positive if

the determined implicit consent was accurate and the feedback is negative if the determined implicit consent was inaccurate; and

upon determining that the feedback is positive adjusting the consent rules to reinforce determination of the implicit consent based on the consent rules, and upon determining that the feedback is negative, adjusting the consent rules to improve the determination of the implicit consent based on the consent rules for use in determining subsequent implicit consent for a transaction.

14. The computerized method of claim 10, further comprising prompting the user for explicit consent to the transaction upon the generated data weighted values failing to satisfy one or more consent thresholds.

15. The computerized method of claim 10, wherein the consent rules determine a weight to be applied to the biometric data based on the context data.

16. One or more computer storage media having computer-executable instructions for determining implicit consent to a transaction from a user that, upon execution by a processor, cause the processor to at least: receive a request to complete the transaction;
automatically collect, by a wearable computing device of the user, biometric data associated with the user using a biometric interface, the biometric interface including a skin contact interface comprising electrodes in contact with skin of the user that detect conductance of the skin between the electrodes to collect biometric data;
receive, by the wearable computing device, context data including one or more of repeated transaction information of the user and transaction data of the user associated with recently collected biometric data;
in response to the request to complete the transaction, apply consent rules to the biometric data and the context data to generate, by the wearable computing device, weighted data values;
upon the generated weighted data values satisfying one or more consent thresholds, automatically determine, by the wearable computing device, that implicit consent of the user for authorization of the transaction from the user is available, without obtaining explicit consent from the user; and
based on the automatically determined implicit consent and an authenticated identity of the user, authorize the transaction for completion without action being required by the user to provide consent to authorize the transaction.

17. The one or more computer storage media of claim 16, wherein the biometric data includes a galvanic skin response and a heart rate and generating the weighted data values includes determining whether values of the galvanic skin response and the heart rate are normal or abnormal and, upon determining that at least one value of galvanic skin response or the heart rate is abnormal, generating at least one weighted data value that does not support the implicit consent.

18. The one or more computer storage media of claim 17, wherein satisfying one or more consent thresholds includes determining whether a quantity of biometric data values exceeds a defined value, and upon the quantity of biometric data values not exceeding the defined value, withholding the implicit consent.

19. The one or more computer storage media of claim 16, wherein the computer-executable instructions, upon execution by a processor, further cause the processor to:
obtain feedback from the user based on the determined implicit consent, wherein the feedback is positive if the determined implicit consent was accurate and the feedback is negative if the determined implicit consent was inaccurate; and

upon determining that the feedback is positive, adjust the consent rules to reinforce determination of the implicit consent based on the consent rules, and upon determining that the feedback is negative, adjust the consent rules to improve the determination of the implicit consent based on the consent rules for use in determining subsequent implicit consent for a transaction.

20. The one or more computer storage media of claim 16, wherein the authenticated identity of the user is based on persistent authentication for a period of time associated with the wearable computing device being worn by the user, the persistent authentication for the period of time being determined based on the user continuing to wear the wearable computing device for the period of time.