

Technical Disclosure Commons

Defensive Publications Series

December 2023

Location-based Automatic Payment Prompts for Merchant Payments

Ajay Prasad

Karthik Srinivas

Preethi Chethan

Sree Nihit Munakala

Mutum Bindiyarani Devi

Follow this and additional works at: https://www.tdcommons.org/dpubs_series

Recommended Citation

Prasad, Ajay; Srinivas, Karthik; Chethan, Preethi; Munakala, Sree Nihit; and Devi, Mutum Bindiyarani, "Location-based Automatic Payment Prompts for Merchant Payments", Technical Disclosure Commons, (December 21, 2023)

https://www.tdcommons.org/dpubs_series/6533



This work is licensed under a [Creative Commons Attribution 4.0 License](https://creativecommons.org/licenses/by/4.0/).

This Article is brought to you for free and open access by Technical Disclosure Commons. It has been accepted for inclusion in Defensive Publications Series by an authorized administrator of Technical Disclosure Commons.

Location-based Automatic Payment Prompts for Merchant Payments

ABSTRACT

Initiating digital payment to a merchant via a payment app requires users to scan a code identifying the merchant's payment identifier. Scanning QR codes requires explicit user action, and can be time-consuming, cumbersome, and error-prone, especially in busy stores. The absence of prominently displayed QR codes at some merchant establishments further complicates the process. This disclosure describes techniques that improve the process of initiating digital payments to a merchant. With user permission, location-based triggers are used to determine likely payment intent and automatically provide a suitable prompt to the user, thus eliminating the need for manual scan of QR codes. The merchant payment address can also be automatically identified, and multi-merchant payment prompts provided when appropriate.

KEYWORDS

- Payment intent
- Payment prompt
- Location-based trigger
- Digital payment
- Merchant identifier
- Payment address
- Unified Payments Interface (UPI)
- Merchant location

BACKGROUND

In the context of digital payments from shoppers to merchants, a default mechanism is for the shopper to scan a quick response (QR) code, e.g., printed QR code or QR code displayed on a

merchant digital display, to initiate the payment. The QR code encodes the merchant's payment identifier and optionally, transaction-related data such as the amount to be paid. Scanning QR codes to initiate payment requires explicit user action, and can be time-consuming, cumbersome, and error-prone, especially in busy stores. The absence of prominently displayed QR codes at some merchant establishments further complicates the process. Some shoppers may not know how to initiate digital payments via QR-codes or may be reluctant to do so, favoring other modes of payment instead.

DESCRIPTION

This disclosure describes techniques that improve the process of initiating digital payments to a merchant. With user permission, location-based triggers are used to determine likely payment intent and automatically provide a suitable prompt to the user, thus eliminating the need for manual scan of QR codes. The merchant payment address can also be automatically identified, and multi-merchant payment prompts provided when appropriate.

Location-based triggers

With user permission, user location data, e.g., obtained from GPS or other sensors from a user device such as a smartphone, smartwatch, etc. are analyzed to determine when the user is near a merchant establishment. When the user is detected to be in proximity to a merchant establishment, the likelihood of a payment transaction is estimated.

With merchant permission, historical transaction data for the merchant are analyzed to determine historical transaction volume and current transaction velocity. These can be used to determine the merchant's popularity and the probability of a payment event when users are at the merchant location. Time of day can be factored into these calculations, e.g., by recognizing peak

transaction periods for various merchants from the transaction data. For example, restaurants may experience peak transaction volume during meal hours.

If the user permits, the user's past payment history at specific locations can be analyzed. If the user has a history of making payments at a particular merchant at the location, a higher likelihood of transaction can be estimated. Further, the duration a user spends at a merchant location can be analyzed, e.g., higher dwell time can indicate payment intent. Store operational hours, e.g., available from data sources such as a digital map, can be looked up to determine whether the merchant is currently open for business, which makes payments to the merchant more likely.

Automatic payment prompts

When a high probability of payment is identified based on the above-described factors, a notification is provided on the user device via the user's digital payments app. If the user is detected to be at a particular merchant, the notification can include the merchant identifier and a digital payment address for the merchant. If the user location is associated with multiple merchants, e.g., merchants next door with a mall or bazaar, the payment prompt can include multiple merchant identifiers. Providing automatic payment prompts eliminates the need for the user to manually initiate a transaction.

The digital payment identifier for the merchant may be identified by matching the user location against a merchant location database. Alternatively, or in addition, with permission from users that previously performed a payment transaction at the location, digital payment identifiers for merchants matching the location can be retrieved from the payment transaction record.

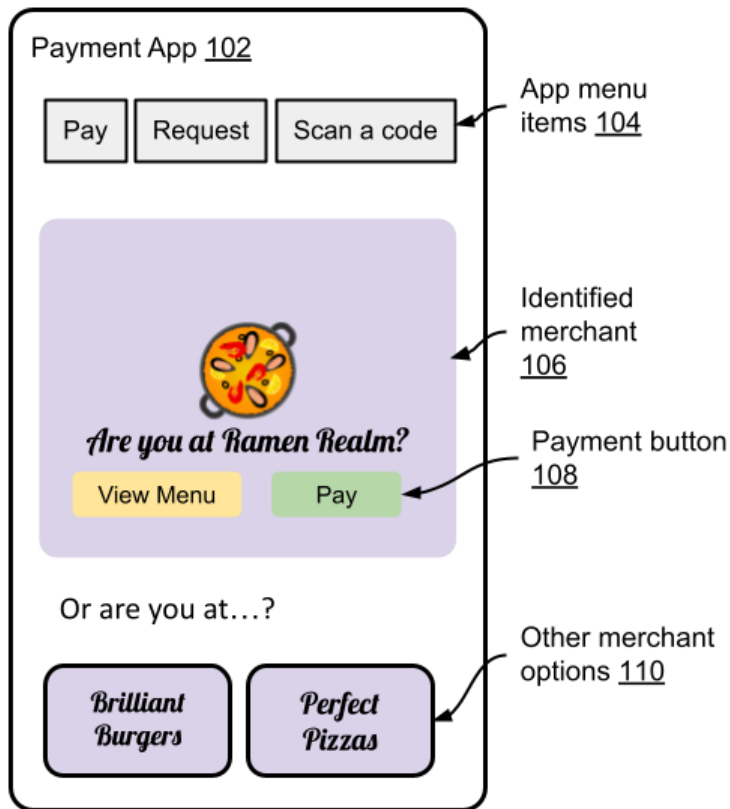


Fig. 1: Automatic payment prompt based on prediction of payment intent

Fig. 1 illustrates an example of an automatic payment prompt based on prediction of payment intent. When a user is detected as being at a merchant location and likely to carry out a payment transaction, a payment prompt is automatically displayed, e.g., by a payment app (102). The app may include a set of menu items (104) that allow the user to make payments (“pay”), request payments (“request”), or to scan a QR code (“scan a code”).

The user interface of the app includes a payment prompt (shown in lilac). As seen in Fig. 1, the prompt includes a merchant identifier (106) and options associated with the merchant, e.g., view menu, pay, etc. A payment button (108) is prominently displayed for ease of transaction. In the example of Fig. 1, based on the user location, the merchant “Ramen Realm” is shown.

If the user is at a location where there are multiple merchants, additional merchant

options (110) can be included. In the example of Fig. 1, additional merchants “Brilliant Burgers” and “Perfect Pizzas” are shown. While Fig. 1 illustrates a payment prompt provided within a payment app, the payment prompt can also be generated by the payment app and provided to the user as an operating system notification.

The techniques described herein eliminate the need for a user to scan a QR code to initiate digital payment. By automatically determining payment intent and providing prompts that include merchant payment identifiers, the techniques improve user engagement and can speed up digital payments.

Further to the descriptions above, a user may be provided with controls allowing the user to make an election as to both if and when systems, programs or features described herein may enable collection of user information (e.g., information about a user’s payment history via digital payment apps, a user’s preferences, or a user’s current location and dwell time at the location), and if the user is sent content or communications from a server. In addition, certain data may be treated in one or more ways before it is stored or used, so that personally identifiable information is removed. For example, a user’s identity may be treated so that no personally identifiable information can be determined for the user. Thus, the user may have control over what information is collected about the user, how that information is used, and what information is provided to the user.

CONCLUSION

This disclosure describes techniques that improve the process of initiating digital payments to a merchant. With user permission, location-based triggers are used to determine likely payment intent and automatically provide a suitable prompt to the user, thus eliminating

the need for manual scan of QR codes. The merchant payment address can also be automatically identified, and multi-merchant payment prompts provided when appropriate.

REFERENCES

1. Sedouram, Ramprasad; Prasad, Ajay; and Agrawal, Gajen, "Automatically Displaying Payment QR Code Upon Detection of Transaction Intent", Technical Disclosure Commons, (November 27, 2023) https://www.tdcommons.org/dpubs_series/6444
2. "Dynamic Payment Option Interface Based on Scanned QR Code", Technical Disclosure Commons, (December 19, 2023) https://www.tdcommons.org/dpubs_series/6510