QUALITY MODELING FOR COMMUNICATIONS

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QUALITY MODELING FOR COMMUNICATIONS

ABSTRACT

The disclosure describes techniques for collecting quality information about communications that are initiated by activation of navigation elements on a user interface of a user device. The quality information may include user survey data and communication characteristics data. The communication, referred to hereinafter “click-to-communicate”, may include for example, placing a telephone call to a predesignated telephone number (such as “call click”, “click-to-talk” or “click-to-call”), chatting through a chat window (such as “click-to-chat”), texting (such as “click-to-text”), downloading of software programs (such as “click-to-download”), transferring to a webpage (such as “click-to-deep link”), etc. A system collects characteristics of the communication that takes place by activation of navigation elements. Once the communication is complete, the system provides the user with survey questions. The system advantageously gathers the resulting quality information for measurement and analysis of service.

KEYWORDS

- click-to-call
- user survey
- call quality
- duration threshold
BACKGROUND

In Internet advertising, a predicted quality of a landing page for an advertisement may be used to detect quality of the advertisement. In mobile advertising, such as click-to-call, the action after a user clicks on the advertisement may include a communication, such as a telephone call, chat, video conference, etc. Determining the quality of such communication is difficult to automate, since the communication (e.g., a call) may involve real-time interaction and signals from such interaction may be difficult to measure automatically. Human evaluation of click-to-call communication may not be feasible or scalable. It is beneficial for quality information to determine the user experience of a communication, e.g. to judge the quality of a click-to-call navigation element in a user interface.

DESCRIPTION

A system for collecting communication information includes a computing device that collects communication information for communications requested by activating navigation elements, e.g. images, buttons, texts, etc., on a user interface of user devices. The system may conduct user surveys to measure quality of communications, detect characteristics of the communication, and analyze the results. The system may use the results to predict communication quality. Communication information may be exploited as ground truth to build a model for predicting quality of communications. In some implementations, search engines may use such communication information in retrieving and ordering of search results that include navigation elements. Communication information may also assist advertisers to make decisions regarding communications with potential customers, such as decisions about provision of navigation elements, advertising platforms, training for people answering communications, etc.
Communication information may be defined to interpret a particular type of communication. Communication information may include communication characteristics data and/or user survey data. In some implementations, communication characteristics data may be used to qualify survey data. In some implementations, communication characteristics data may be used to assess calls without survey data. Communication characteristics data may include non-conversational based factors, such as duration of the communication, start time and end time, caller area code, whether the user was connected with a receiving party, etc. Use consent to obtain certain types of communication characteristics data may be requested and received prior to collecting the data. Permissions may be at least as required according to the laws for the jurisdictions involved.

Survey data may be gathered by a user entering answers to one or more questions presented to the user after completion of a communication. The user survey may be employed to obtain data directly from the user rather than gathering data from a third party rater who may score the communication according to guidelines. The user survey, according to the description herein, enables a user that participates in the communication to contribute to answers to the surveys. In this manner, quality information may reflect a user’s personal experience and intent in requesting the communication. An assortment questions may be provided in the survey. Sample questions may include: “Did the business meet the purpose of your call?”; “How satisfied were you with the business during the call?”; and “Did your call connect to right the business?” The user survey may be implemented in various ways.

The user device may be any computing device enabled to present navigation elements, such as an advertisement displayed on a user interface of the user device, and switch to a different communication mode, e.g. place a telephone call, upon activation of the navigation element. For example, the user device may be a mobile device, e.g. smartphone, a laptop
computer, desktop computer, a wearable device, such as a smartwatch, head mounted display, etc.

In some instances, when a particular receiving device is represented in a search result, the navigation element may be constantly presented on the user interface of the user device as an item of the search result page or the navigation element may appear only at predefined times. For example, a navigation element may be scheduled to be provided on an advertisement at a start and/or ending date. In some instances, the navigation element may be scheduled to appear during particular hours.

Some communications, such as calls and chats, may be assessed according to length of the communication. In some implementations, the duration of a communication may be measured from the time the navigation element is activated, e.g. clicked. In some implementations, a communication may be considered active from the point that a connection is made, e.g. from the time a person picks up a call, where permissions are obtained to monitor such communication parameters by all parties to the communication and according to the laws for the jurisdictions involved.

In some implementations, a variety of levels of duration thresholds may be defined to indicate quality of the communication based on its duration. The duration thresholds may be determined based, at least in part, on various type of communication initiated by the particular navigation element, e.g. vertical market served (e.g. finance, Internet/telecommunications, etc.), purpose for the communication, particular parties involved, etc. For example, if a call is made to an insurance company for the purpose of purchasing an insurance policy, the call may be expected to be long, such as 300 to 900 seconds in length. By contrast, a call for a retail inquiry may be shorter in length, such as 95 to 300 seconds in length.
In some implementations, short communications may be considered poor quality and long communications may be considered good quality. In still some implementations, short communications and long communications may be considered poor quality and communication durations between the two thresholds may be considered good quality. For example, short communication may indicate a failed communication and long communications may suggest long wait times or bad customer service.

In some examples, duration thresholds may include a super short duration, such as 2 seconds, 5 seconds, 10 seconds, 15 seconds, etc., a very short duration, such as 60 seconds, 75 seconds, 95 seconds, etc., and long duration, such as from 300 seconds, 360 seconds, 420 seconds, etc. Other communication length thresholds are possible. In some implementations, calls that are less than a super short duration threshold may be labelled, “unknown”, calls that fall within a range of a super short click and a very short click may be labelled as “bad” and calls with durations longer a very short click and a long duration may be labeled as “good” or “neutral”.

In some instances, very short calls that are below a minimum threshold, e.g. 10 seconds, may indicate that activation of a navigation element (e.g. a click) did not lead to a communication. A call may have been non-conversational because, for example, the call was dropped or never answered. In some implementations, for unconnected communications, characteristics data may be excluded from analysis and a user survey may not be provided. In some implementations, very short calls may be considered to be poor quality in the analysis of quality information.
Figure 1 illustrates a diagram of an example system 100 that includes a server 102, user devices 120a, 120n, receiving devices 140a, 140n and a network 116. The user devices 120a, 120n may access the server 102 and the receiving devices 140a, 140n via the network 116. In some implementations, the server 102 may be a hardware device that includes a processor, a memory, and network communication capabilities. The server 102 may access the network 116. The server 102 may include an analysis module 104, a database 106, a user survey module 108, and a characteristics module 110.
The analysis module 104 can be code and routines for measuring and interpreting communication information and retrieving information from the database 106 based on data from user surveys provided by user survey module 108 and communication characteristics data provided by characteristics module 110. In some implementations, the analysis module 104 is implemented using hardware including a field-programmable gate array (FPGA) or an application-specific integrated circuit (ASIC). In some implementations, the analysis module 104 is implemented using a combination of hardware and software.

The user devices 120a, 120n may be computing devices that each include a memory and a processor, for example a mobile telephone, a laptop computer, a desktop computer, a tablet computer, a wearable device, e.g., a head-mounted display and a smart watch, a mobile email device, a portable game player, a portable music player, a reader device, a television or other electronic device capable of accessing a network 116. Users 124a, 124n may interact with the user devices 120a, 120n.

The receiving devices 140a, 140n may be computing devices that each include a memory and a processor, for example a mobile telephone, a laptop computer, a desktop computer, a tablet computer, a wearable device, e.g. a head-mounted display and a smart watch, a mobile email device, a portable game player, a portable music player, a reader device, a television or other electronic device capable of accessing a network 116, such as receiving devices 140a and 140n accessing network 116. Receiving parties 144a, 144n may interact with the receiving devices 140a, 140n.

The network 116 can be a conventional type, wired or wireless, and may have numerous different configurations. The network 116 may include a local area network (LAN), a wide area network (WAN) (e.g., the Internet), and/or other interconnected data paths across
which multiple devices may communicate. The network 116 may also be coupled to or includes portions of a telecommunication network for sending data in a variety of different communication protocols.

The system 100 may enable users 124 and/or receiving parties 144 of the system to receive notifications regarding data collection and use and specify and/or consent to the collection and use of data related to the communications, such as contents of the communication and personal information. For example, system 100 may provide users with multiple selections directed to specifying and/or consenting to the use of personal information. For example, consent may be associated with permissions to: listen to content of the communication, monitor voice pitch of the users 124 and receiving parties 144, detect the start and/or end of communication with a receiving party 144 at the receiving device 140, duration of hold time, transfer between receiving parties 144 of a receiving device 140, etc. Consent selections may be implemented in a variety of ways. For example, system 100 may cause buttons or check boxes to be displayed next to various consent selections. Consent selections may include options for users to not consent to the collecting and/or use of personal information.

A method to determine quality of a click-to-communicate may be performed by the server 102 of Figure 1. The server 102 may receive a search query transmitted from a user device 120. For example, the user device 120 may access a search engine in server 102 via a user interface 122 on the user device 120, such as through a browser stored on the user device 120. In another scenario, the user device 120 may include a thin-client application that communicates with a search engine. The server, such as through the search engine, returns results that include at least one navigation element to the user device 120 that are displayed via the user interface 112 or as part of a thin-client application.
The server 102 may detect that a navigation element from the search results was activated by the user device 120. In some implementations, the system may determine the type of communication for the navigation element. For example, the system may categorize the receiving party by purpose of the communication, vertical market served, etc. Upon detection that the navigation element was activated with user consent, the server 102 may collect communication characteristics data.

The server 102 may determine whether the communication is complete. If the communication is still ongoing, the server 102 may continue to collect communication characteristics data. When the communication is complete, the server may provide the user device 120 a user survey. In some examples, the user survey may be provided immediately upon completion of the communication. In some examples, the user survey may be provided at a later time, such as an hour later, one day later, one week later, etc.

In some instances, the user survey may be automatically provided on the search results page as a user interface automatically returns back to the search results screen after a communication is complete. In some instances, a user survey is presented by the user manually navigating, e.g. by activating a return button, back to a browser. In some examples, a user may be presented with the option of receiving the user survey and the survey is provided if the user consents.

The server 102 may receive the user survey data. The communication characteristics data and user survey data may be processed and analyzed to determine quality of the communication. In some implementations, the analysis may be based on the type of communication. A duration threshold may be defined based on the type of communication, e.g. industry, vertical market, purpose of the communication, etc.
If more communications are to be collected the process may receive another search query. If no additional communications are to be collected, the process may analyze a group of the quality information collected. For example, quality information for communications taking place over a period of time may be collated and analyzed for a receiving device, over an industry sector, for a particular receiving party, etc. In some implementations, the quality information may be used to rank receiving devices listed in search results by receiving devices that have the highest quality communications to lowest quality communications.