Trust and Reputation System

Trust and reputation system is a technique to assess the credibility, quality, and reliability of online available resources that will help the customers to decide which resources are reliable and safe to achieve an objective. It also helps the serious service provider and online players to correctly represent the reliability of their services.

Explanation:

The authenticity of survey responses in manual and existing online survey platform is questionable.

In PayPerSurvey the T&R system is used to calculate the authenticity of surveys and repute of the subscribers. When we talk about authenticity a question arises in our mind on what bases or parameters authenticity and repute will be calculated?

The working of the T&R System depends on parameters in “PayPerSurvey”. These parameters are the basic component for calculating the trust of a subscriber. Our system calculates the trust of a subscriber on the bases of the following three parameters:

1. Time difference
2. Consciousness Value
3. Acceptance Rate

We used honesty value and honesty badge for subscribers trust and reputation. On the bases of the above-mentioned parameters, our system will categories the individual trust in Gold, Silver and Brown Badges. The subscriber will be paid according to the badges.

Parameter scaling

There are three parameters mentioned above they all have a different unit. Each parameter should be on the same scale to avoid inconstancy. For this purpose, we used the feature scaling methodology to scale each parameter with continuous value between 0 to 1.

1. Time parameter (Tp):

**Attempt time (Ta)** of a question in the survey is the time which user takes during answering of survey question. Our system will calculate the attempt time against the answer of each question.

The **benchmark time (TBM)** is the minimum time to take a question, calculated on the bases of two factor:

1. Reading time (Tr)
2. Decision time (β)

According to research average human being Englis, reading speed is between **170WPM-280WPM. So**

Minimum Reading time (Tr) = total no of words of a survey /280WPM

**Decision time (β)** is given to each question on the base of its complexity by Researcher/company. Decision time is calculated in licked scale (1------60s)

Sothe benchmark time will be

TBM = Tr + β ------------------------- (1)

**Time difference (T**ᐃ**)**

The time difference will show the difference of attempt time from benchmark time

Tᐃ= TBM - Ta

**Constraint on (T**ᐃ**):**

The system only concern subscriber should not take less time than the minimum required time to attempt a question. If a subscriber takes more time, then the benchmark time system will consider it as completely authentic and assign zero difference

(Tᐃ ) =

Where Tᐃ time difference and TBM benchmark time. Than calculate the mean of time difference of questions

will give a negative parameter impact. Other two parameter havea positive impact. To calculatethe overall positive impact of all parameter. we need to subtract it from 1 to make it positive impact.

Tp = 1 -

2. Conciseness value (Cv)

To maximize the authentication of each survey response The system will randomly generate a **consciousness checking question (cq)** to check whether a subscriber attempt survey consciously or not.

For example, consider the following question

Q. Select the Word GIFT?

A) Pakistan

B) GIFT

C) Gujranwala

D) Punjab

If a subscriber attempt survey consciously he/she definitely tap on (option B) if not, System will consider its survey wrong, dicard it and assign Cv = 0

**Cv=**

3**. Acceptance rate**

This parameter measures the loyalty or active participation of subscribers to PayPerSurvey. For example, the system sends 100 surveys to a subscriber but he/she attempt only 5 or 10 which show non-seriousness which should be penalized in the form of degrading the profile and if he/she shows seriousness get an incentive.

To deal with this problem we will calculate the acceptance rate of surveys of the subscriber.

**Arate= So / SA**

Where So istotal offered survey , and SA istotal accepted surveys

**0 ≤ Arate ≤ 1**

Higher value will show that subscriber is serious and low value will show non-seriousness

Survey Authenticity value

As we mentioned above that if consciousness value of subscriber Cv = 0, then the system will discard the survey, so his/her authenticity value will also be zero

**SA =**

Subscriber Repute value (SH):

Subscriber repute value will be calculated on the base of mean survey authenticity value and Acceptance rate of a subscriber.

Where n represents the total number of surveys

SR =

Customers concerns only survey should be authentic they don’t care about the active participation of a subscriber. From the perspective of the company, it concerns both parameters. Considering this Authenticity value weight should be higher than Acceptance rate.

w1 = 60% = 0.6

w2 = 40% = 0.4

An question arises how we define that weight.For instance, these values are assumptions. When we will have enough data weights will be tuned accordingly

Honesty badge policy

In this system, there will be three badges Brown, Silver, and Gold. The system will assign honesty badge to each subscriber on the bases its repute value and they will be paid on the basis of these badges.

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Where SR is survey authenticity, and Ns is number of completed surveys

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