Feedback Acquisition in Web-based Learning

Andrea ŠTEŇOVÁ*

Slovak University of Technology in Bratislava
Faculty of Informatics and Information Technologies
Ilkovičova 3, 842 16 Bratislava, Slovakia
andrea.stenova@gmail.com

Explicit feedback from website visitors is very important and its meaning is constantly growing nowadays. For efficient web-based learning, we need information on how students interact with system, which materials they find hard to learn or insufficiently explained, and which on the other hand they like. User's interests and opinions can be determined by user feedback acquisition, thanks to that it is possible to review, improve, recommend and personalize webpage content.

Most of the time, students are not willing to provide the feedback or they do it only when they are very satisfied or not satisfied at all. Another problem is that we should not disturb students during their studies. Inappropriate explicit feedback might bother them, however, lack of explicit feedback and irreplaceable information we receive from it is a great issue that should not be ignored.

To rate acquisition we use rating scale, the widget to express user's preferences on selected range. Different users prefer using different scales for their ratings [1] and also rating scale itself affects user's rating [2, 3]. The way rating scales are perceived by user is called rating personality. Rating scale has characteristics such as range, visual representation in the system and presence or absence of neutral value. Selection of scale depends on domain, size (texts or contents) of object, in which it is displayed and of users' preferences. User rating process consists of these steps:

1. display of rating scale in object,
2. user rating and logging,
3. object evaluation.

Displayed scale is selected according to several rules. Its scope is determined by a range of the displayed object. For short texts we use smaller range, however for larger texts ratings should be more accurate, so we use larger rating scale range. Displayed scale can change after user has rated an object. If the ratings are concentrated around neutral value, we change the range of the scale to leave out neutral values and force user to decide. It is possible to extend the range of the scale in cases when user ratings contain the same value very often. That means, he does not have enough options to rate

* Supervisor: Mária Bieliková, Institute of Informatics and Software Engineering

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as he wants. To eliminate problem with changing of scale without informing the user, we only offer the change to user and he has to approve it.

After user's rating we record rating value, object, that was rated, and also rating scale, on which user rated. As scale can change, it may happen, that one object will have ratings on different scales. Since with change of rating scale, we don't want to throw away previous ratings, we have to recalculate them. However, it causes the problem with transformation of these ratings. The transformation may not be easy, in out method we use mathematical normalization.

We have to evaluate the results, to decide which objects in system are good and bad. This evaluation is computing from users' ratings and we also normalize these ratings. Results are transformed according to used scale and to previous user ratings. All ratings are converted into <0,1> interval and then we normalize them. When transforming according to previous user ratings, we extend ratings onto whole interval. By use of this technique we can effectively eliminate user overly positive or negative ratings.

We have partially evaluated transformation of ratings between different rating scales. Moreover, we find out most and least preferred rating scales. In future work we will focus on other methods of feedback. We will evaluate the proposed method in the educational system ALEF (Adaptive LEarning Framework). Collected feedback can be used to delete or improve bad objects, to recommend objects with the best results and to personalize the content thanks to identified user preferences.

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