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Steering User Behavior with Badges: Discussion on 3-6

The setup of model

During the introduction of the setup of the model, Professor pointed out that there is a problem: each a_i has a corresponding p^i and the sum of the probability is equal to one. However, there is a life-action which makes the sum of the probability of online-actions smaller one. Though the authors can make the sum of probability of online-actions equals to one, they don't do it. This provides the authors a flexibility to construct the model and this is a clever way to do this. Besides this problem, Professor also pointed out that using $g(x, p) = \| x - p \|_2^2$ is very strange in this case. The usual way to calculate the distance between two vectors should be scale divergence or other norm way. However, here the author uses this strange and unusual way to calculate the distance. This is not because this way is the best estimation, but because the fact that it will help solve the problem more easily. Professor also pointed out that the utility is independent and that it can be different for every user but it only depends on the state.

One targeted dimension

In the One targeted dimension, Professor pointed out that may be due to the limitation of space, the author directly uses $U(a^1) = U(x_a)$ which is very strange and confusing here. They should just use $U(x_a)$ rather than $U(a^1)$. This is unnecessary and will confuse the reader then they read the paper. In addition, in this equation, the author doesn't think about the marginal of utility: the more utility you have, the less current badge utility. It should be an exponential function rather than a linear equation. This means that the author should use the equation like $V_b / \sum_i V_{bi}$ to control the gap between each utility. This also leads to the bias of the final result since the author uses linear gap here and therefore leads to the equal division in the final result.

Empirical Evaluation Compared With Model

One important point of discussion and glaring weakness of the paper is that the model doesn't explain the data. In other words, they created a theoretical model (which has many issues on its own) to formally model user behavior in the presence of badges. Then, they evaluate stack overflow data and find that the analysis (such as increased user behavior around the badge boundary) aligns well with the model's predictions. However, the model in no way explains the data. Essentially the paper is

split into two halves: one is more theoretical for modeling user behavior, and the other half analyzes Stack Overflow data, but the authors don't show that their model explains the data. It would make their model more robust if it can explain the data in some way.

Another point of discussion is the figure showing that a more even value split between the badges results in higher yield. In the case where badges value are independent, in other words the value of one badge doesn't depend on previously obtained badges, this is true. This is the assumption throughout the paper. However, in real life often a badge's value depends on previously obtained badges. For instance, you are probably more incentivized to obtain a gold badge after obtaining bronze and silver. In this case, instead of evenly splitting the value among the two badges to maximize yield, the optimal would be putting more value on the first badge and less on the second.

Ease of Action Types on Stack Overflow

Professor mentioned that for Figure 3, which shows the activity around the badge boundary with the "relative days to badge win" on the x-axis, the number of questions and answers remained stable. Professor pointed out the reason behind this is that it's much easier to vote on a question or answer since it's just one click as opposed to asking a question or providing an answer. Asking a question or answering requires much more thought as opposed to voting. Users can't really be steered for those two action types, but users can be steered more easily on voting.

Conclusion

Professor mentioned that the paper is a little depressing because the results show that users will go back to normal after obtaining a badge. That is, users are steered towards the badge, but as soon as they get the badge they fall back to their preferred probability. It's slightly depressing since no matter what the site designer does this behavior will always happen. Overall, the paper has many flaws. The main flaws are with the model. The authors use unclear notation sometimes (like in the utility function) and certain assumptions are made that make the model easier to optimize, but these assumptions don't hold in real life. Since a couple of the authors come from theoretical CS backgrounds, they want to construct a model by using some convenient assumptions. Despite the flaws, the paper is still an important step towards understanding user behavior in the presence of badges.