

# Boomerang 2.0: Categorizing and Ranking Requester Tasks

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## INTRODUCTION

Crowdsourcing platforms such as Amazon Mechanical Turk, Clickworker, and Microworkers fail to address reputation between workers and requesters. Workers cannot easily search for and find requesters and tasks they are *interested* in, and requesters cannot easily be matched with *high-quality* workers who are *proficient* in their specific tasks.

Currently, *Boomerang* solves one aspect of the problem by introducing “a reputation system that differs from traditional rate-and-leave systems by ‘boomeranging’ the accuracy of the rating decision back to directly impact the user. This feedback loop means that giving someone a high rating increases the likelihood of working with that individual again, while giving a low rating reduces that likelihood” [1]. *Boomerang* thus effectively matches high-quality workers with high-quality requesters (and vice versa), yet no match is made in regard to task category (classification) and worker proficiency with respect to that category.

In this paper, we introduce *Boomerang 2.0*, an algorithmic approach to categorizing and ranking requester tasks. Requesters can tag tasks into categories such as “transcribing,” “summarizing,” and “image tagging,” and workers can search for tasks based on tags using the search utility. Machine learning will be used to train *Boomerang 2.0* to automatically categorize tasks.

Furthermore, *Boomerang*’s ranking algorithm will be updated as to take into account not only worker and requester ratings but also the *task* completed. For example, a worker who may have completed tasks in two different categories for the same requester may be proficient in one area (e.g. “transcribing”) but not another (e.g. “image tagging”). The requester, therefore, is

likely to rate the worker high with respect to the tasks in the first area (“transcribing”) but low with respect to the second (“image tagging”). Given that the worker completed a roughly equal amount of each type of task, with the current state of *Boomerang*, *all* of the requester’s tasks would most likely appear in the *middle* of the worker’s task feed, and the requester’s tasks would be available to the worker at approximately an *average* decay.

However, *Boomerang 2.0* will have an updated ranking algorithm that takes into account task category, resulting in a deviation in both the *position* where a requester’s different tasks will appear in the worker’s task feed and the *decay* at which they will be available. In the above example, the specific requester’s “transcribing” tasks will appear at the *top* of the worker’s task feed, and the worker will have early access to these tasks, because the worker was rated *high* by the requester for this specific category of tasks. On the other hand, the specific requester’s “image tagging” tasks will appear at the *bottom* of the worker’s task feed, and the worker will have delayed access to these tasks, because the worker was rated *low* by the requester for this specific category of tasks.

As more requesters rate the worker with respect to the various task categories, *Boomerang 2.0* will learn which types of tasks the user is interested and proficient in. In the previous example, tasks categorized as “transcribing” by new requesters will begin to populate the worker’s task feed, below the “transcribing” tasks created by (high) rated requesters but above “image tagging” tasks created by all requesters.

As a result, workers and requesters will not only be matched on the basis of ratings between workers and requesters but also the type of task that was completed. This will allow workers to

easily search for and find requesters and tasks they are *interested* in and requesters to easily be matched with *high-quality* workers who are *proficient* in their specific tasks.

## **RELATED WORK**

Man-Ching Yuen, Irwin King, and Kwong-Sak Leung have created a model that takes into account both worker performance history and worker task searching history in order to more accurately recommend tasks to workers [2]. Later, the same group created a different model that takes into account both interacting behaviors between workers and requesters and factor analysis based on probabilistic matrix factorization in order to more accurately recommend tasks to workers [3].

However, although both models consider worker interest and proficiency with respect to tasks, they fail to account for ratings between workers and requesters. Furthermore, they merely recommend tasks fit for the worker; Boomerang 2.0 takes an additional step by giving priority access to these high-ranking workers (with respect to task category).

Boomerang 2.0 will therefore allow workers and requesters to not only be matched on the basis of ratings between workers and requesters but also the type of task that was completed. This will allow workers to easily search for and find requesters and tasks they are *interested* in and requesters to easily be matched with *high-quality* workers who are *proficient* in their specific tasks.

## **REFERENCES**

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