This paper explores processing techniques to deal with noisy data in crowdsourced object segmentation tasks. We use the data collected with Click’nCut, an online interactive segmentation tool, and we perform several experiments towards improving the segmentation results. First, we introduce different superpixel-based techniques to filter users’ traces, and assess their impact on the segmentation result. Second, we present different criteria to detect and discard the traces from potential bad users, resulting in a remarkable increase in performance. Finally, we show a novel superpixel-based segmentation algorithm which does not require any prior filtering and is based on weighting each user’s contribution according to his/her level of expertise.

**ABSTRACT**

This paper explores processing techniques to deal with noisy data in crowdsourced object segmentation tasks. We use the data collected with Click’nCut, an online interactive segmentation tool, and we perform several experiments towards improving the segmentation results. First, we introduce different superpixel-based techniques to filter users’ traces, and assess their impact on the segmentation result. Second, we present different criteria to detect and discard the traces from potential bad users, resulting in a remarkable increase in performance. Finally, we show a novel superpixel-based segmentation algorithm which does not require any prior filtering and is based on weighting each user’s contribution according to his/her level of expertise.

**MOTIVATION**

Foreground/background segmentation aims at generating accurate binary masks. Human labels obtained through crowdsourcing can help on this task, but they are often noisy. On the other hand, computer vision algorithms such as those that generate accurate binary masks can be inaccurate as well. In our work, we explore the possibility of each one of them being improved/denoised by the other, in order to improve segmentation quality.

**FILTERING CLICKS AND USERS**

An incorrect click can be detected by looking at other clicks in its spatial neighborhood and their visual consistency. We use SLIC [3] and Felzenszwalb [4] superpixel oversegmentations to detect conflicts in the distribution of clicks.

**DATA WEIGHTING**

Users are not simply accepted or rejected, but the contribution of their clicks is weighted according to an estimation of their quality. Then, superpixels are summed in different oversegmentations [3,4] with the weighted clicks that fall into them. A binarization threshold learned from training data is finally applied.

**CONCLUSIONS**

- Our experiments indicate that more significant gains can be obtained by estimating the quality of each individual user on gold standard task.
- Estimating users quality based on their performance in the segmentation task is more reasonable than just based on the error rate of the clicks they generate.
- Considering all data with a soft weighting approach seems a more robust approach compared to the hard filtering and selection of object candidates.