

Chromaticity Gradient Mapping Comparison User Study Analysis

Post Task Survey Result

We prompted the six Likert-scale questions to the users right after they finished editing one image with both tools (in random order).

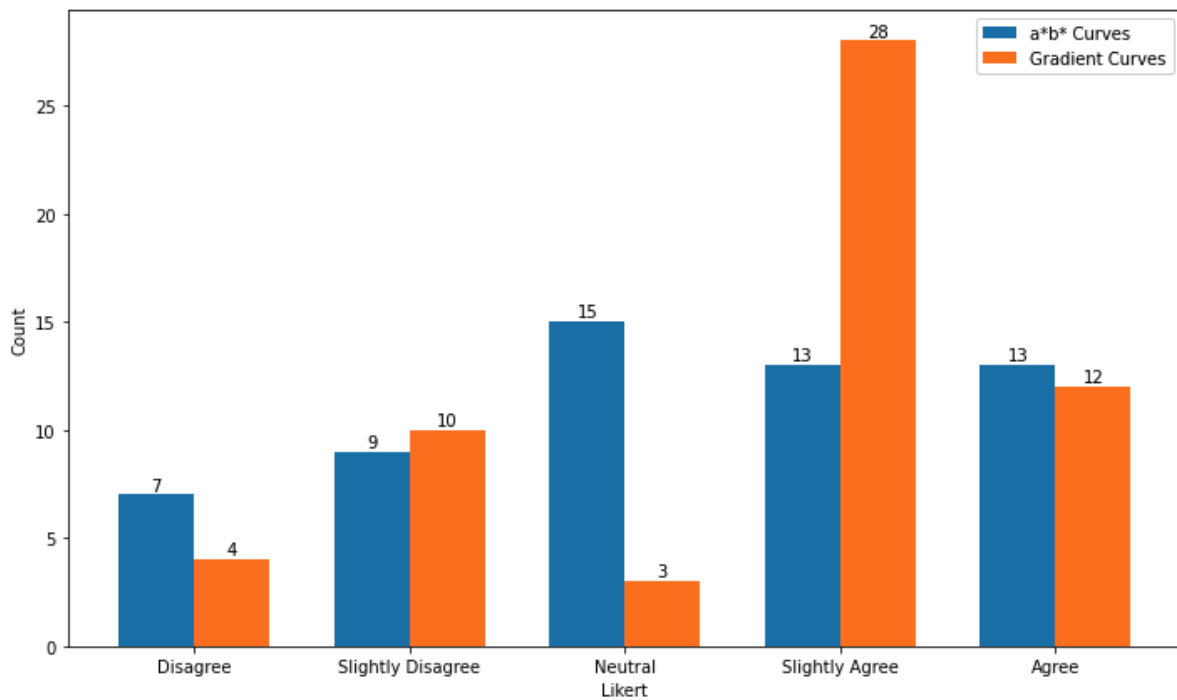
For **each interface**, we ask the users to rate the following statements.

- I am satisfied with the editing result created using [tool].
- I found it easy to understand and predict how edits made in [tool] would affect the image.
- I found it easy to enhance specific details in the image using [tool].

Here are the statistics of the result. Note that *Gradient Curves* refers to our method, and *a*b* Curves* refers to per channel adjustment.

We performed the Mann-Whitney U Test with the alternative hypothesis that Gradient Curves get a higher score on user satisfaction. We did not get a statistically significant result.

Prompt: I am satisfied with the editing result created using [tool].
Mann-Whitney U Test:
Statistic: 1855.5
P-value: 0.08819048041573452



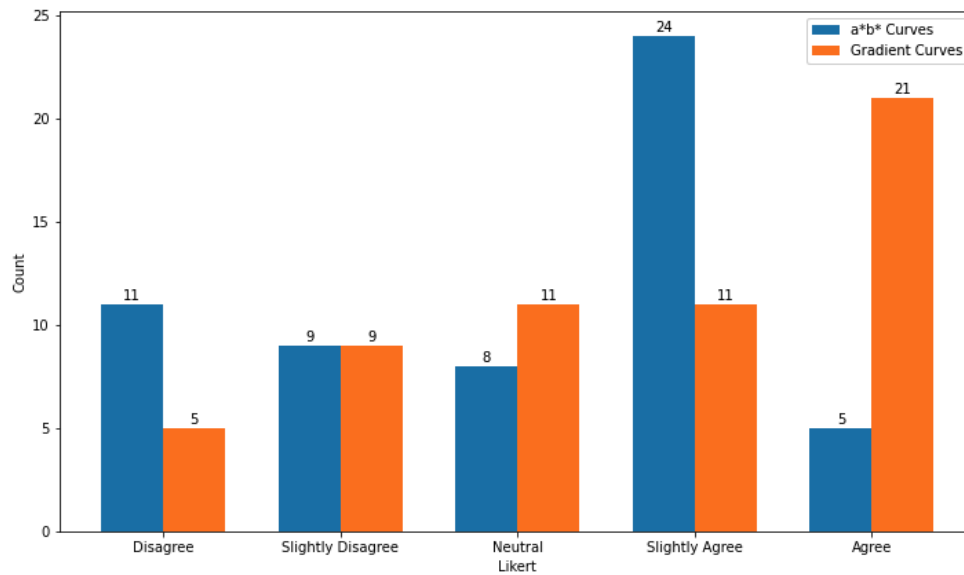
1. We performed the Mann-Whitney U Test with the alternative hypothesis that Gradient Curves is more intuitive to use. The null hypothesis is rejected.

Prompt: I found it easy to understand and predict how edits made in [tool] would affect the image.

Mann-Whitney U Test:

Statistic: 2015.5

P-value: 0.011513383047808646



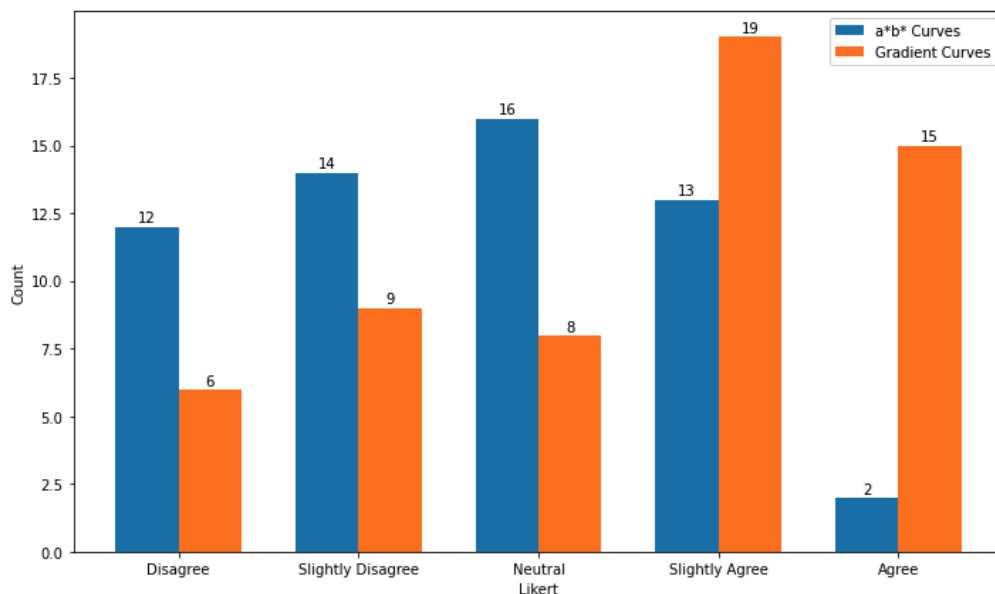
2. We performed the Mann-Whitney U Test with the alternative hypothesis that Gradient Curves is easier to enhance detail. The null hypothesis is rejected.

Prompt: I found it easy to enhance specific details in the image using [tool].

Mann-Whitney U Test:

Statistic: 2240.5

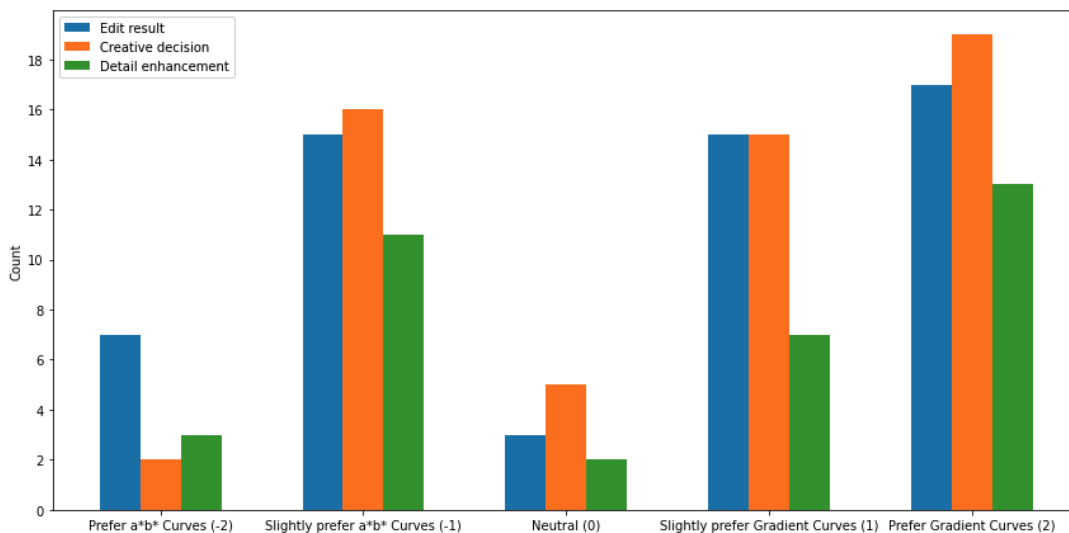
P-value: 0.0001765741249737398



To compare **two interface**, we ask the user to indicate their preference for the following questions:

- Do you prefer edits produced by one interface over the other?
- Do you prefer one interface over the other for exploring creative decisions in this task, e.g. try out different color palettes or contrast intensity?
- Which edit better achieves the goal of enhancing detail contrast within the [specific detail]?

We performed the Wilcoxon signed-rank test with the alternative hypothesis that each score is positive (users prefer Gradient Curves). We found statistically significant results that users prefer Gradient Curves for the given task.



Edit result: Do you prefer edits produced by one interface over the other?

Median User Contrast: 1.0

W-Statistic: 955.0

P-Value: 0.029368990321017977

Creative decision: Do you prefer one interface over the other for exploring creative decisions in this task, e.g. try out different color palettes or contrast intensity?

Median User Contrast: 1.0

W-Statistic: 1038.0

P-Value: 0.0004989200727261647

Detail enhancement: Which edit better achieve the goal of enhancing detail contrast within the [specific detail]?

Median User Contrast: 1.0

W-Statistic: 411.0

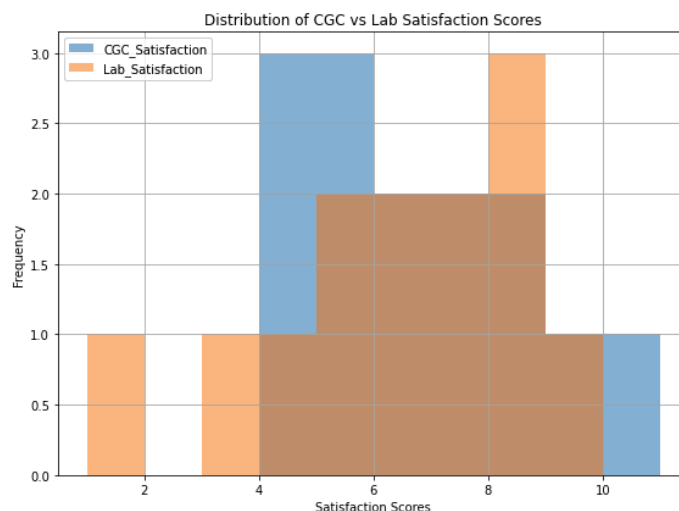
P-Value: 0.022659013812722284

Post-Study Survey Result

We prompted the following questions to the users after they finished all the image editing tasks.

- On a scale from 1 to 10, how satisfied are you with the overall performance of [tool]?
- Five-point Likert scale
 - Ease of Use: Which interface did you find easier to understand and use?
 - Precise Control: Which interface provided a more precise control over color in the image?

By Mann-Whitney U Test, we did not find a significant difference between users' ratings of the two tools.



By the Wilcoxon signed-rank test, we did not find a significant preference for ease of use and control precision among the users.

