Analyzing Effects of Time on Human Accuracy to differentiate CGI vs Photographic Portraits

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Introduction

Understanding the Problem

Human have good ability of differentiating the CGI and Photographic.

We propose the **hypothesis 1** that:

The accuracy of differentiating the CGI and Photographic images of humans can change with time.

Example

Consider the following scenario.

1. If a person is show an image and given only 5 seconds to tell whether it is CGI or Photographic, then the accuracy can be low.

2. If the person is given more time 15 seconds to tell whether it is CGI or photographic, then the accuracy can be better.

We propose the following **hypothesis 2**:

There exists a time called IDEAL TIME, defined as follows.

Ideal Time

IDEAL TIME means the minimum amount of time which is taken by human observer at which the differentiating accuracy is highest.

Our Goals

Designing the experiment to verify the hypothesis.

Conducting the experiments.

Gathering the data of experiment.

Finding the accuracy by statistics.

Presenting our findings.

Designing the experiment

1. We will show image one by one
2. Image will be shown for 5sec, 10 sec, 15 sec …
3. After the time is elapsed

Participants will have four option:

Male/photographic

Male/CGI

Female/photographic

Female/CGI

4. Ex. 10 sec to show image + 5-7 sec to give the answer

Difficulties

1. Obtaining Images

Obtaining the verified CGI and photographic image of the same person is difficult.

Matching the brightness and contrast of the obtained images.

Our Take:

Since we wanted to extend our previous paper, we used the same dataset of images provided in the previous paper.

2. Deciding Time quantum

Which time quantum to select for our experiment.

NO previous research exists related to "Ideal Time"

Our take:

We wanted to focus our experiments on the quick view of the images, hence we decided to go with 5sec, 15 sec, 30 sec.

3. Creating Platform

We want to restrict the image viewing time of participant.

For conducting these custom experiments there is no predefined platform.

Our take:

We are in process of creating the custom platform where the experiments can be constructed on large number of people.

4. Incentives & Participants

Utilizing the Mturk platform is expensive.

We wanted to focus our attention on technical participants

Our take:

We will be conducting the experiment without any incentives. We are planning to evaluate data for 30 participants.

Current State

We conducted some crude level experiment till our platform becomes ready.

We showed the images on our computer one by one to the participants.

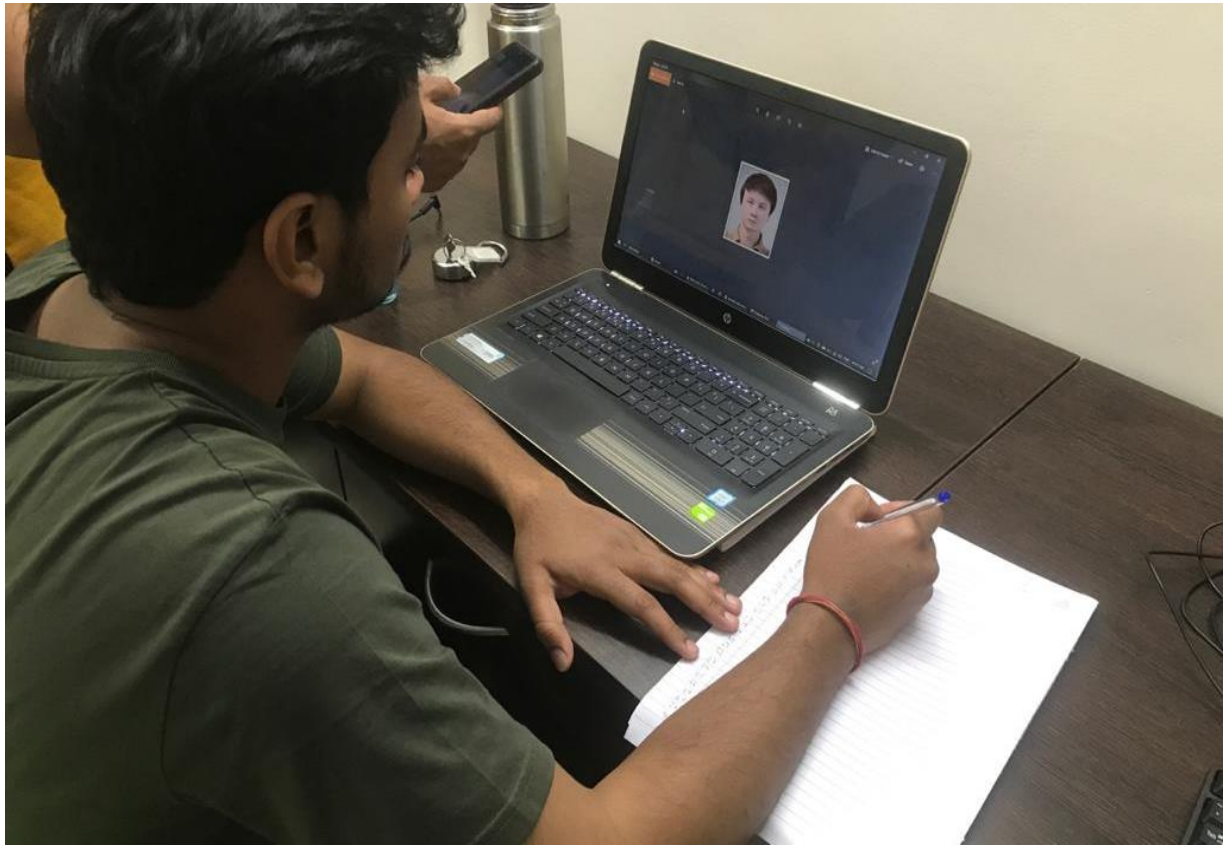
We asked the participants to write the answer on the answer sheet.

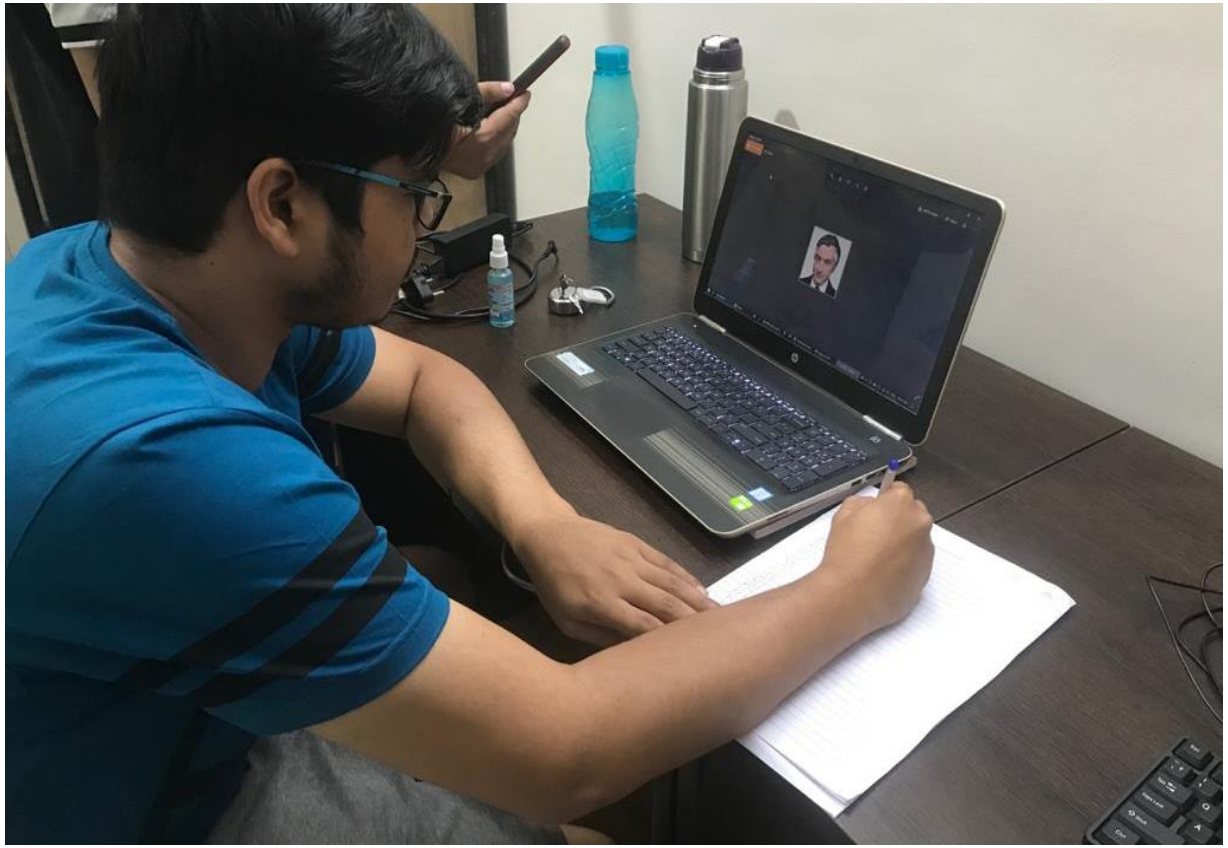
P : Photographic

C: CGI

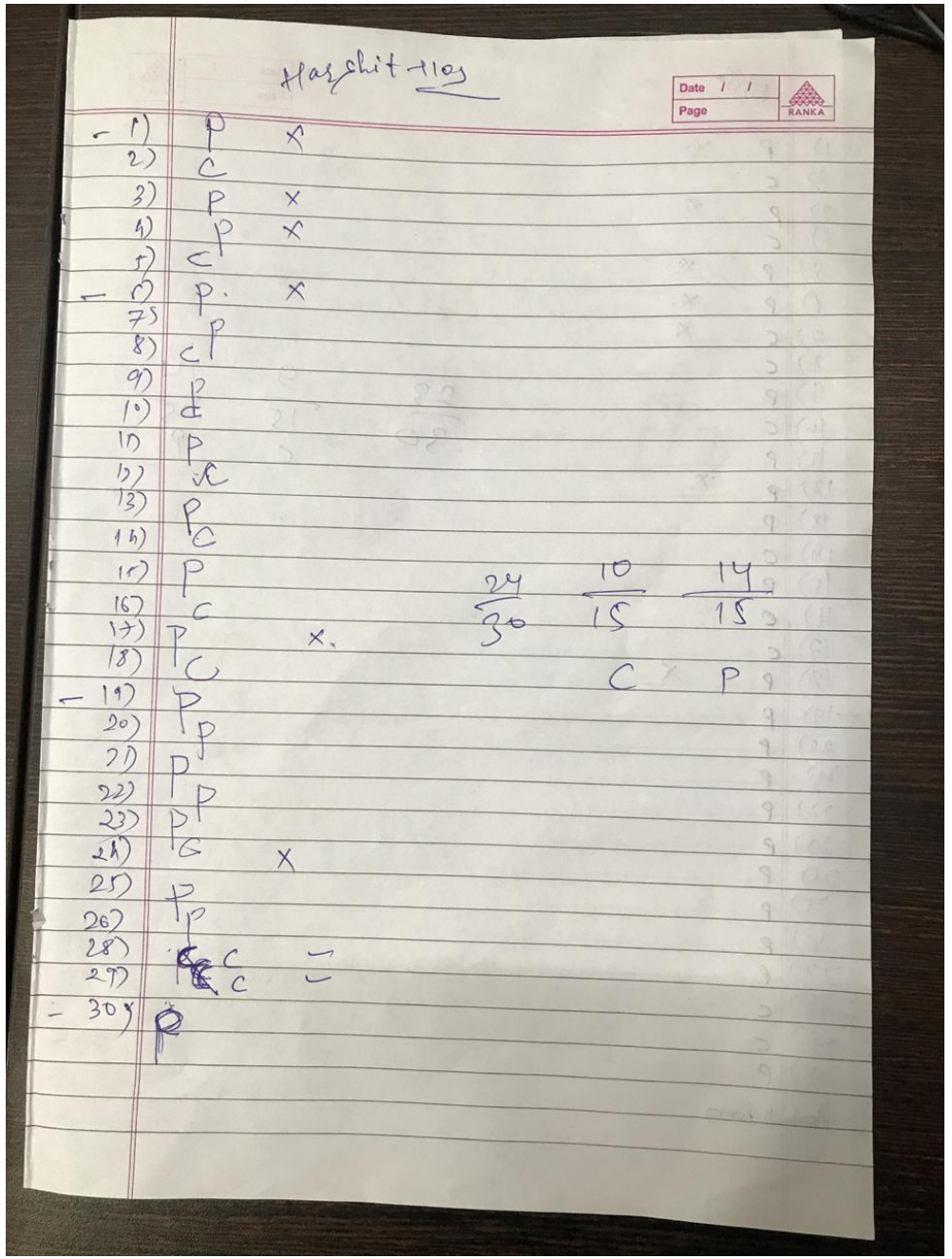
- We decided to set our time quantum to 5sec and 15sec.
- We gave 2 sec to write the answer on answer-sheet.
- We had 4 participants in testing each time quantum.
- We showed a total of 30 images = 15 photographic + 15 CGI

Conducting experiment





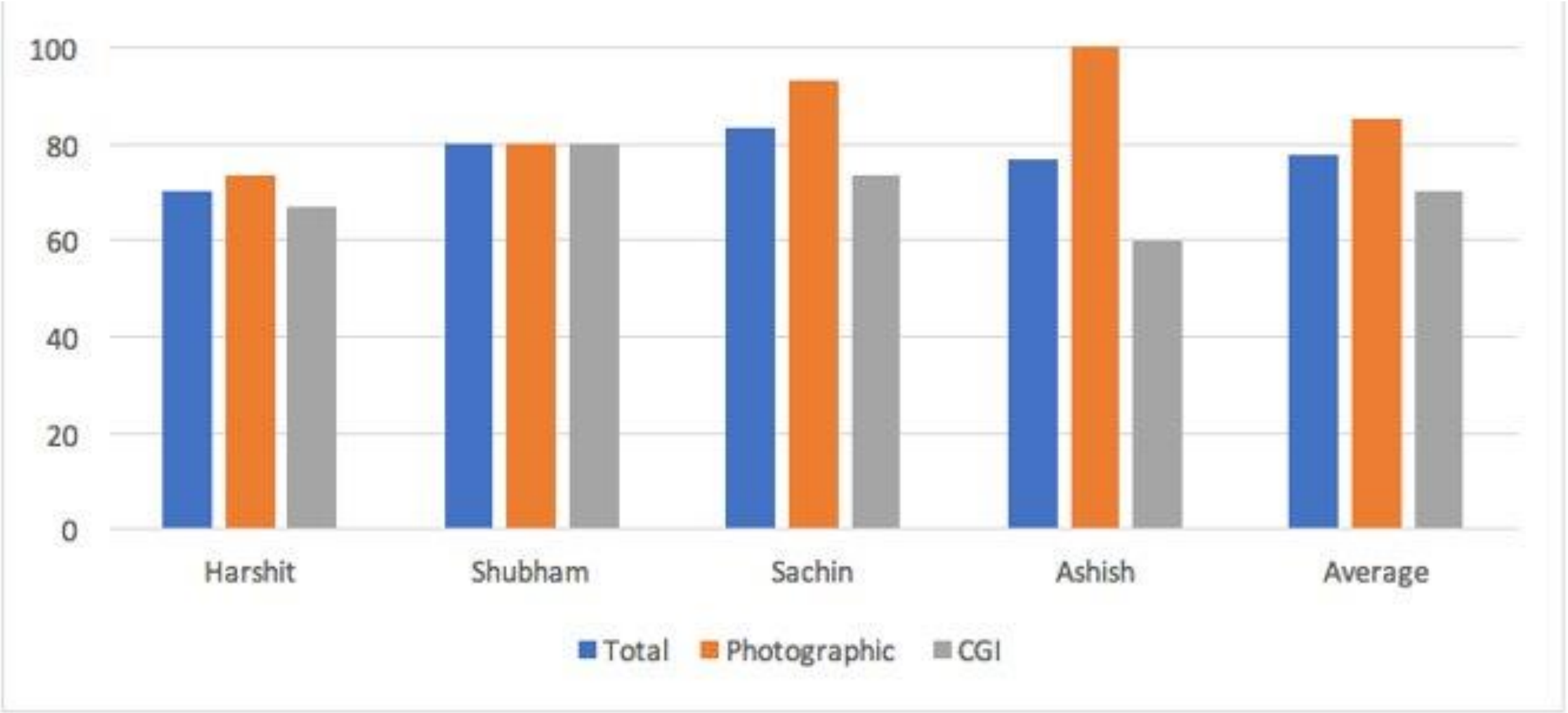
Answer Sheet



Stats for 5 sec

Participant	**Total images=30**	**Photographic = 15**	**CGI= 15**	**%overall accuracy**	**%accuracy in photographic**	**%accuracy in CGI**
Harshit	21	11	10	70%	73.33%	66.67%
Shubham	24	12	12	80%	80%	80%
Sachin	25	14	11	83.33%	93.33%	73.33%
Ashish	23	14	9	76.67%	93.33%	60%
Total	93/120	51/60	42/60	77.5%	85%	70%

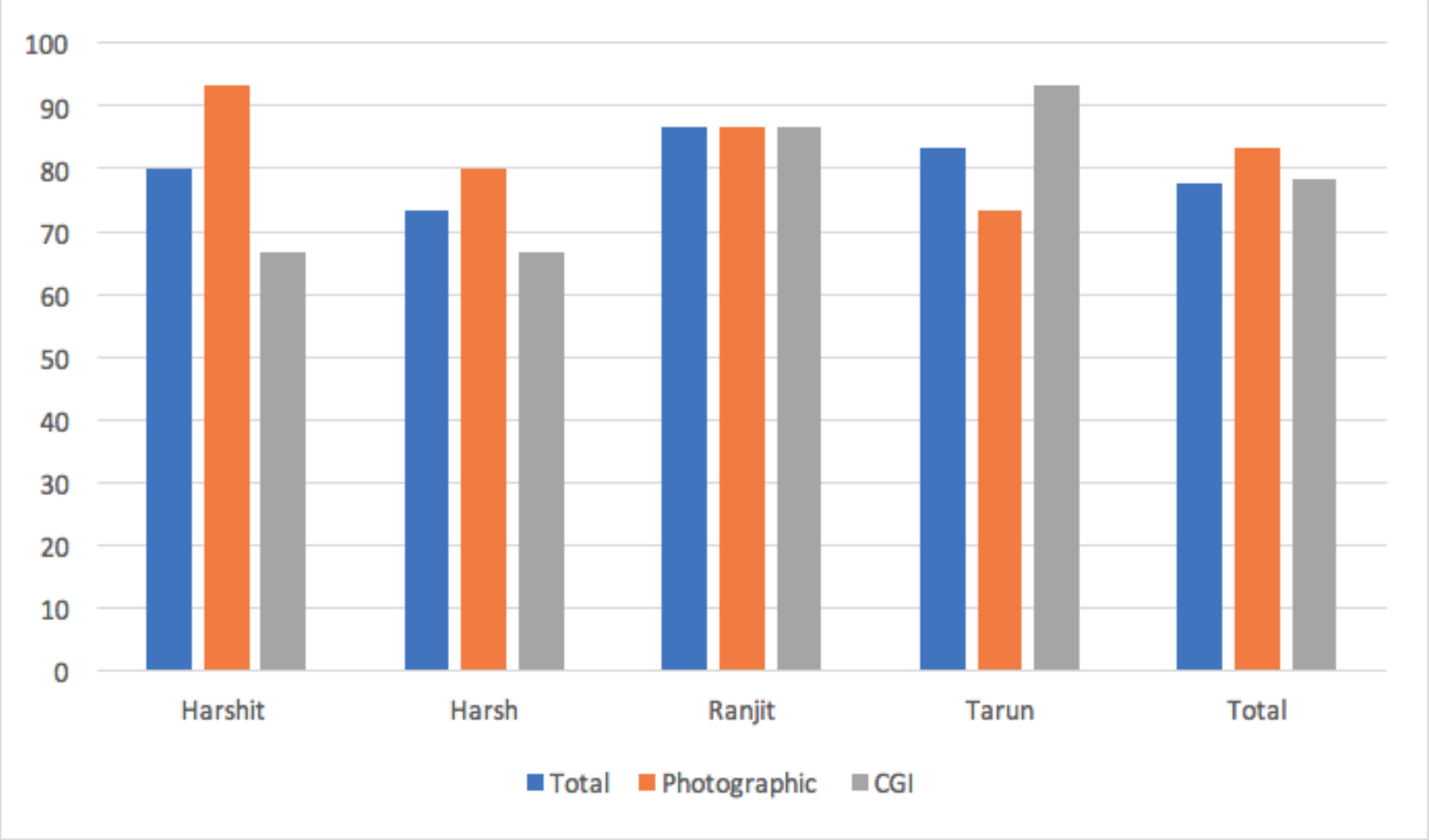
Accuracy Graph



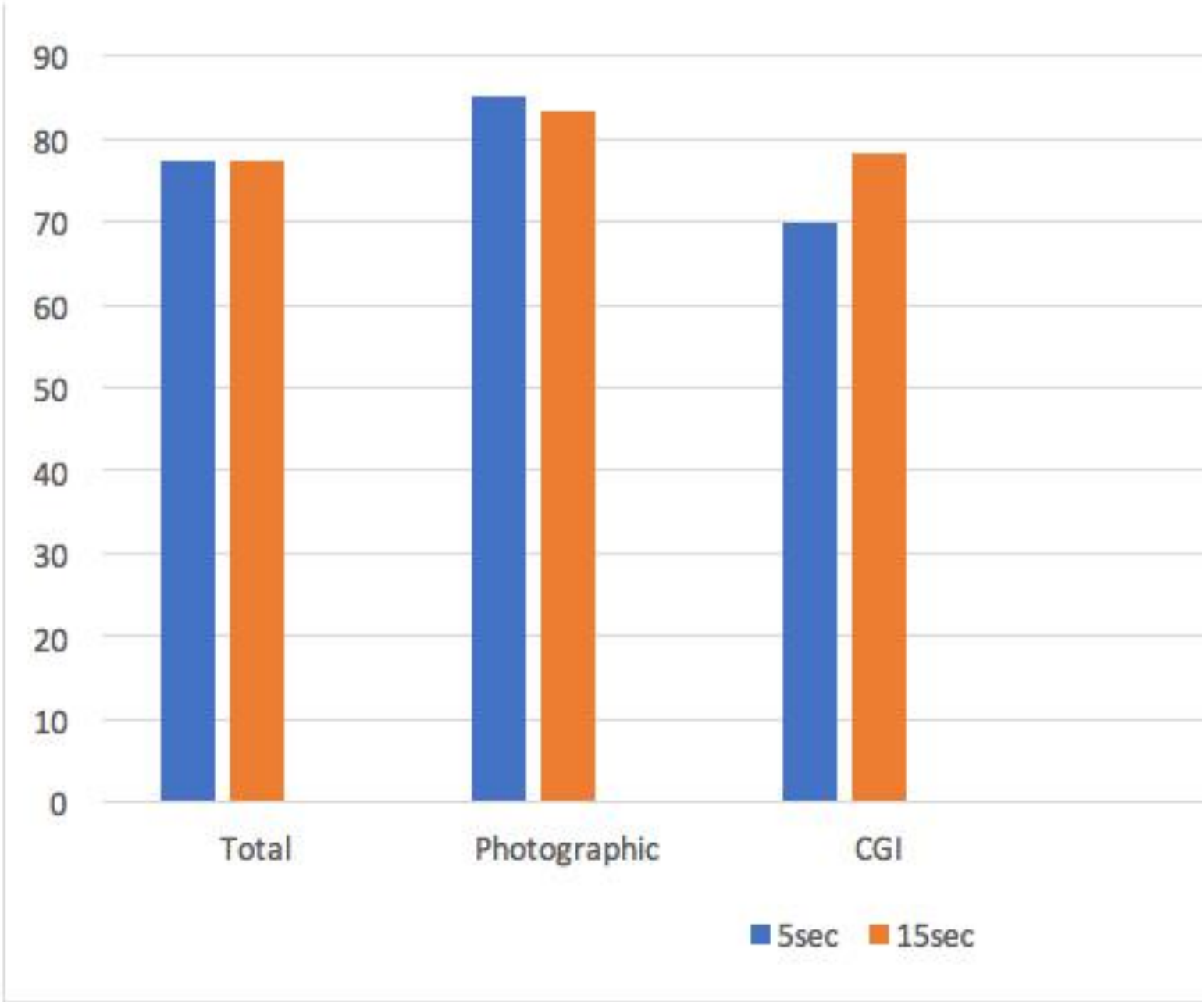
Stats for 15sec

Participant	**Total images=30**	**Photographic = 15**	**CGI= 15**	**%overall accuracy**	**%accuracy in photographic**	**%accuracy in CGI**
Harshit	24	14	10	80%	93.3%	66.67%
Harsh	22	12	10	73.33%	80%	66.67%
Ranjit	26	13	13	86.67%	86.67%	86.67%
Tarun	25	11	14	83.34%	73.33%	93.33%
Total	93/120	50/60	47/60	77.5%	83.33%	78.33%

Accuracy Graph



Comparison Graph



Plan

Design platform and conduct experiment on larger scale.

Try to find the "IDEAL Time"

Gather more data.

Thank you!