# AUDIENCE PARTICIPATION GAMES FOR PROMOTING UKIYO-E

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# OUTLINE

## 1. Introduction

- Game Live Streaming & Twitch
- Audience Participation Games (APG)
- Games with a Purpose (GWAP)
- Audience Participation Games with a Purpose (APGWAP)
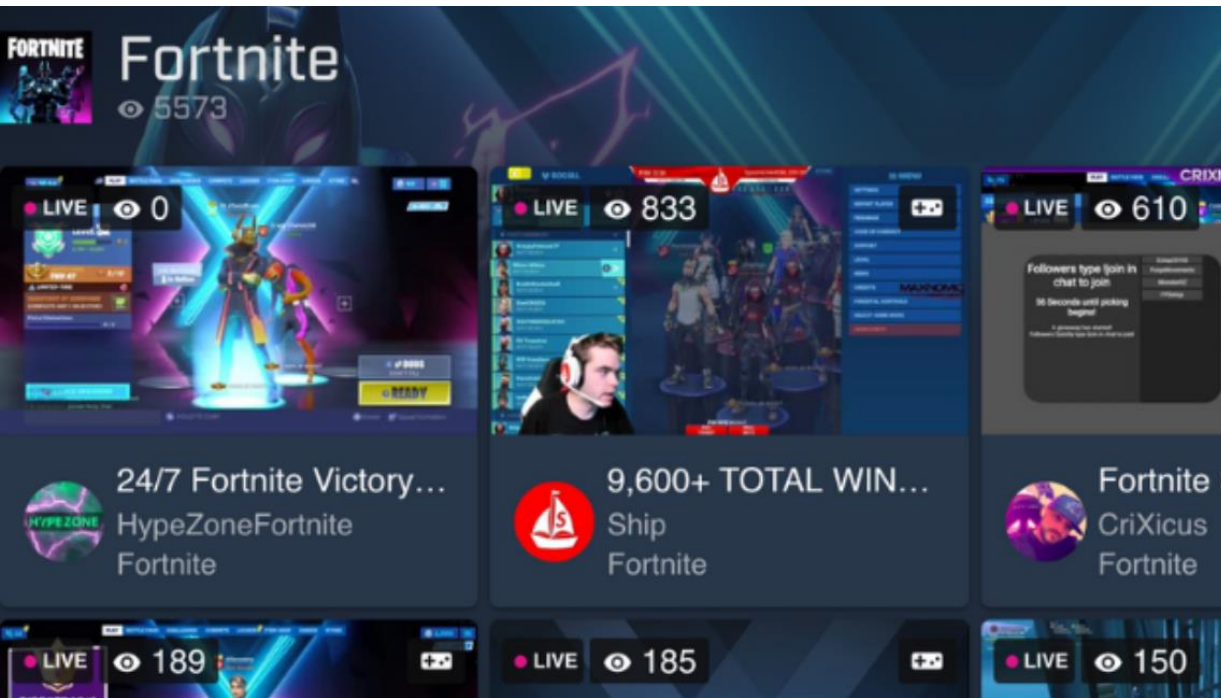
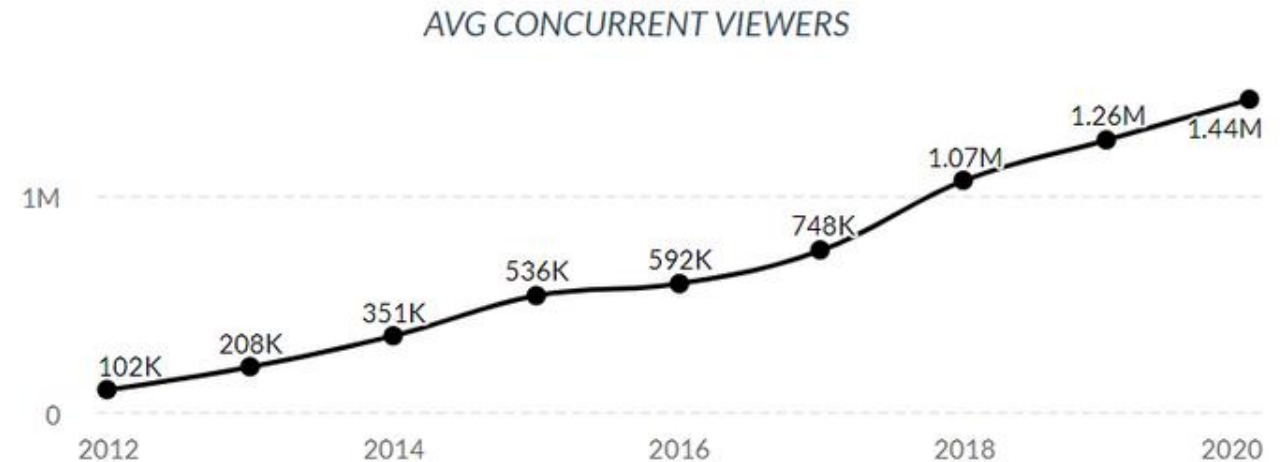## 2. The Proposed APGWAP

- Purpose
- Game Rules
- Other Details
- Evaluation

## 3. Demo

# Game Live Streaming & Twitch





Average concurrent viewers Twitch, 2012-2020

AVG CONCURRENT VIEWERS

As of March 2020, this number had climbed to 1.44 million

https://www.businessofapps.com/data/twitch-statistics/

# INTRODUCTION

## APG

**Audience Participation Games,** a livestreaming design concept that allows audiences participate in gameplay via methods like chat messages.



TwitchPlaysPokemon – Twitch: https://dodona.ugent.be/en/exercises/1678755178/#

# INTRODUCTION
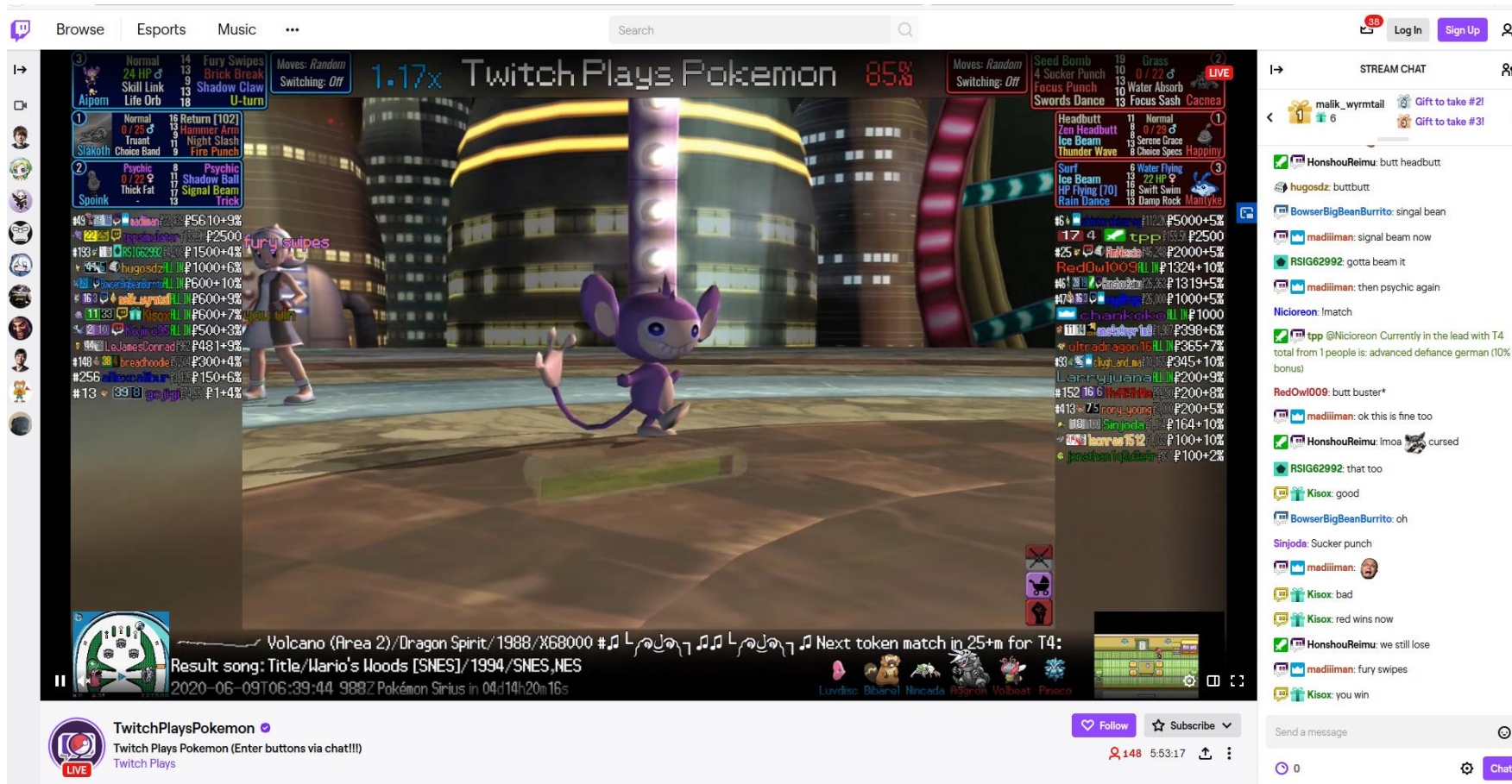
## GWAP

**Games With a Purpose (GWAP)** is the concept of using games for human to solve problems that computers cannot solve.



ESP Game: https://dodona.ugent.be/en/exercises/1678755178/#

アップガップ
# APGWAP

**Audience Participation Games With a Purpose (APGWAP)** is the concept of letting game live streaming audiences help solving problems that computers cannot solve.



The **World's first** APGWAP, presented by our group

https://www.twitch.tv/ch932

Please register for a Twitch account

JUSTIN: Japanese Ukiyo-e Streaming That Improves Narrative

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# Needs for description

❖ For data analysis, deep learning, building recommender system

❖ For those with visual impairment

# Collecting Non-Expert Descriptions





← From
**British Museum**

| Expert description | Painting, album leaf. Landscape. Fuji beyond lake and pine clad promontory. Ink and colours on paper. |
|---|---|
| Non-expert description | The picture show a beautiful view of a very high mountain along with a wide river. The context looks like, there is mist covering everything, there is one boat in the river. |

| Expert description | Woodblock print. Popular culture. Woman with baby, with picture of Kinryuzan Sensoji temple inset. |
|---|---|
| Non-expert description | A japanese woman is holding the kid. The woman wears kimono and so is the kid. There is a picture hanging in the room. It looks like they are mother and son. |

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# CONTRIBUTIONS

❖ **A new concept:** audience participation game with a purpose (APGWAP)

❖ A complete design of APGWAP, which can be of use as **a reference for other purposes**, and results as well as discussions on description quality and

❖ **Player Enjoyment** from a conducted full-scale experiment with the proposed APGWAP.

# GAME RULES

1 Game round has 2 Sessions:

❖ Describing:          80 secs

❖ Voting:               30 secs

| Describers | Voters |
| --- | --- |
| • Can describe multiple images (1 description / image)<br>• Can be a voter in a voting session<br>• Cannot vote for descriptions which are belong to the image he created descript | • Vote for 1 description in the list of description. |

# DESCRIBING SESSION

# VOTING SESSION

**RESULT OF ROUND 16**

A

B

C

Ranking score:
fang2hou: 19
junj1ejj: 16
aoi_monogatari: 9
ligoligo12: 5

SevenC...

touma100...

CH932 Voting session is over. Please wait for its turn.

CH932 Voting session is over. Please wait for its turn.
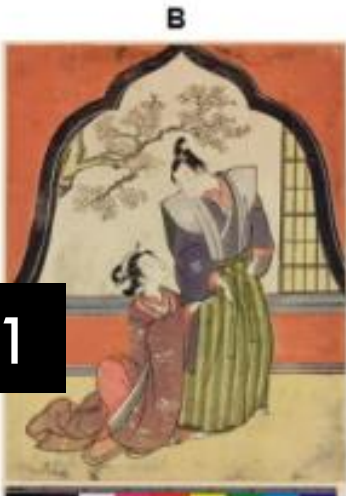
Winning descriptions for this round are:
15: A woman and her child for image A
7: a wife helping his husband dressing for image B
17: flying duck again1 for image C

Score awarded to players:

7_jh_7 ← -2    aoi_monogatori ← 0    doradoramatsu ← -6    ebinkatsu ← -5    fang2hou ← 2
gosou1104 ← 2    hatakeitachiasu ← -2    icelabnijuni ← -6    ichimarumaska ← 1    juni1ejj ← 0
kuralemot ← -5    ligoligo12 ← -1    narutoasaki ← -6    pengold ← -2    sasukeakasi ← 1
touma100 ← -6    uranium410 ← 2

Ukiyo-e Game

👤 3  👁 1,468  ⬆  ⋮

junj1ejj: #13

CH932: You cannot vote for this description because it was the winning description you created before

yoshine621: #16

aoi_monogatari: #18

CH932: Sorry you cannot vote since you are describer. Wait for the next round if you wish.

CH932: You cannot vote for more than one description.

ligoligo12: #17

CH932: you can see full list of ranking score
https://drive.google.com/file/d/1WY3xdfaJbWx q04SdCApliXT4/view

阿_左 (122304532): #18

CH932: Voting session is over. Please wait turn.

Fang2hou: #7

CH932: Voting session is over. Please wait turn.

ctronichikari: #12

CH932: Voting session is over. Please wait turn.

SevenCN1995: #4

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# SOME DESCRIPTION RESULTS FROM GAME
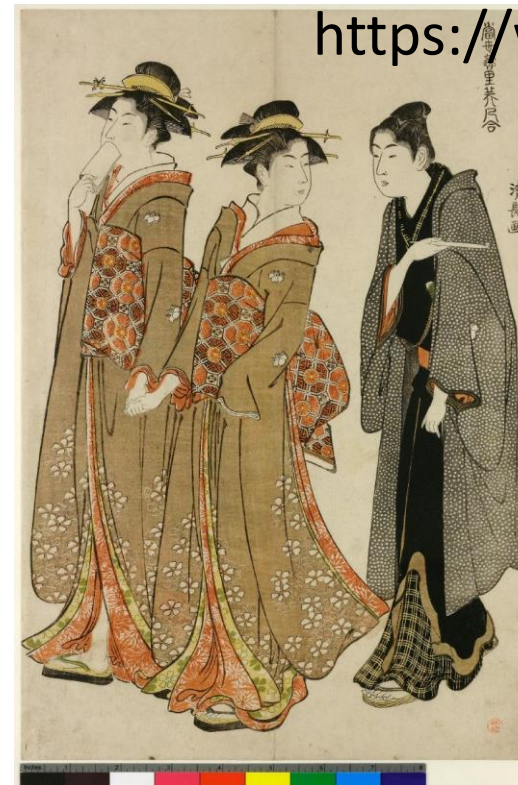


**From JUSTIN Players**

```
"a woman riding a goose": ⊟{
    "score":0.3000000000000001,
    "used_time":5
},
"A woman wearing a kimono flying on a goose": ⊟{
    "score":1.0,
    "used_time":2
},
"flying duck again1": ⊟{
    "score":0.4,
    "used_time":1
```

```
"a women holding her baby": ⊟{
    "score":0.5142857142857142,
    "used_time":2
},
"a woman and her child": ⊟{
    "score":0.6666666666666666,
    "used_time":1
}
```

```
"3 wimen are walking": ⊟{
    "score":0.9411764705882353,
    "used_time":2
},
"three women is talking.": ⊟{
    "score":1.0,
    "used_time":1
}
```

```
"man and woman in Europian clothes": ⊟{
    "score":2.0,
    "used_time":2
},
"A man and a woman": ⊟{
    "score":0.6666666666666666,
    "used_time":1
}
```

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# OVERVIEW



Audiences

describers

voters

Include original

can become

describe

vote

Image

Descriptions

Winning Description

Old image?

describe

Using Pythia to caption images

After 2nd time

No

Its total votes reach threshold?

Yes

Final description for the image
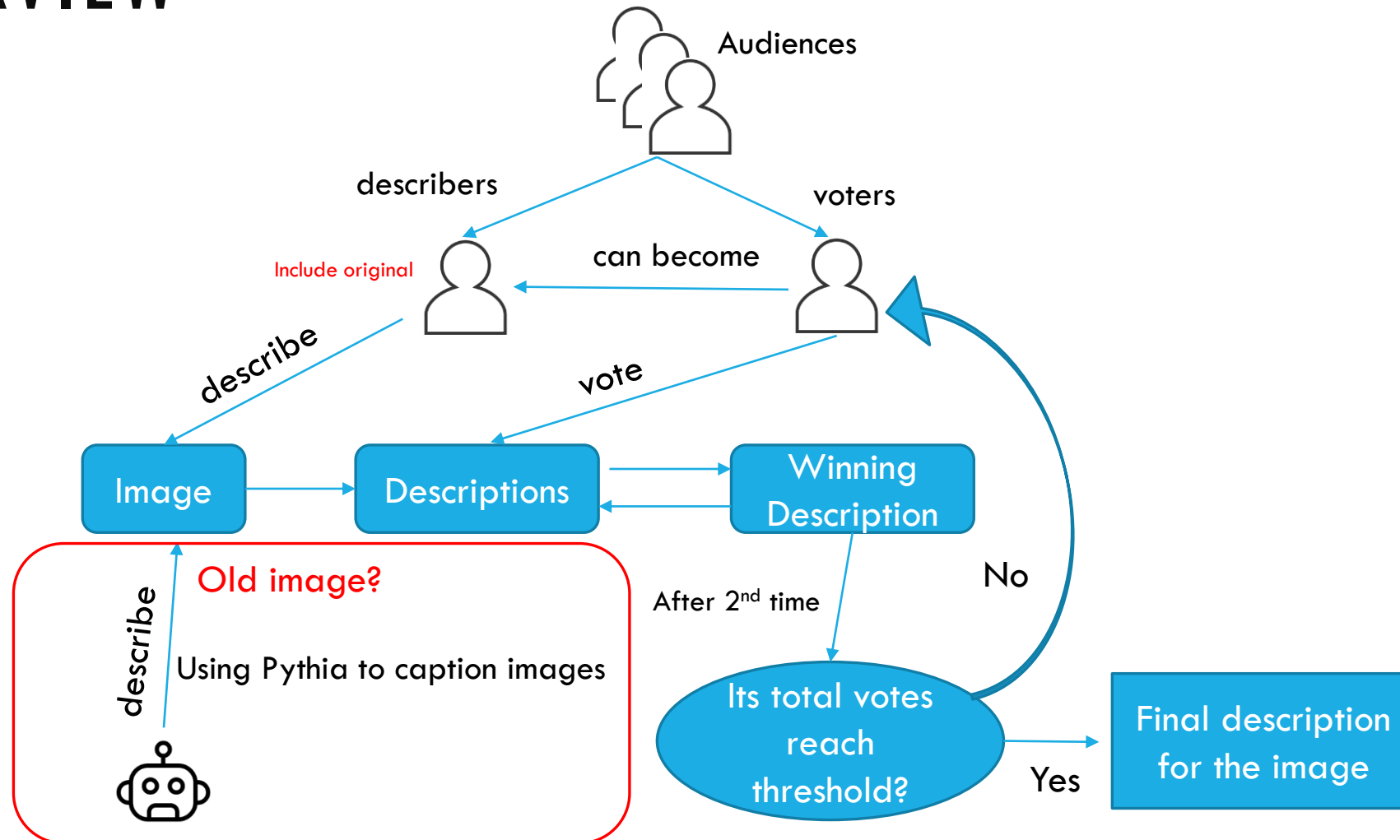
# Descriptions by an AI

(Pythia)



a large group of people standing next to each other
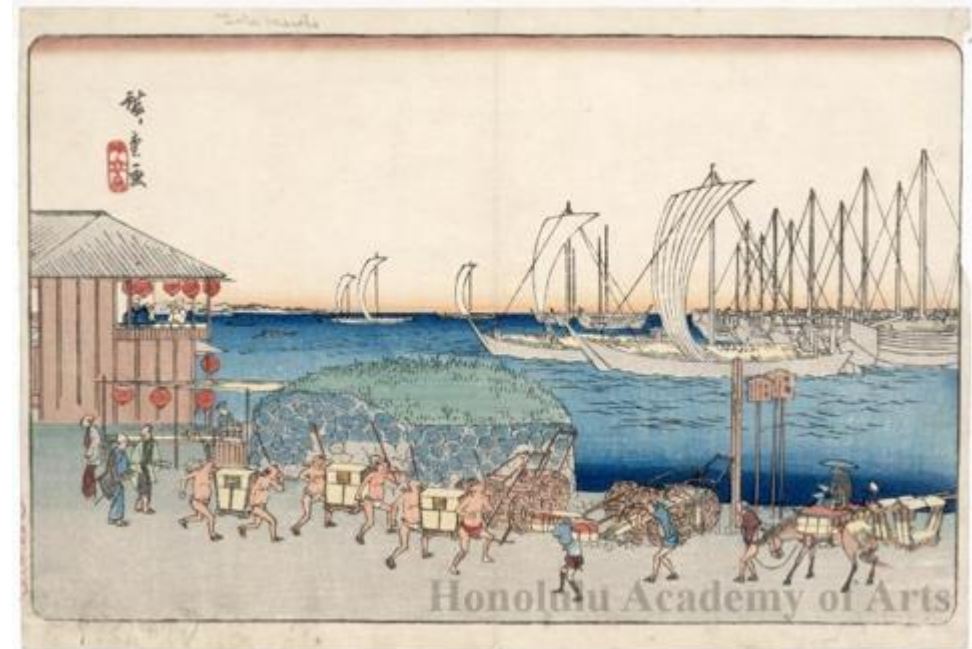


a group of people standing on top of a beach

# EVALUATION

❖ Description Quality

❖ Player Experience (Enjoyment)

correctness & sufficiency

# EVALUATION 1: Description Quality

**3 Stage**

**1.describing**

❖ 24 participants → 4 equal groups
each group describe 5 images

→ 20 Images
6 Desc./Img

**2.voting**

❖ 19 participants → select the best description

→ 20 Images

Best Desc.

**3.evaluation**

❖ 24 participants → ... (next slide)

correctness & sufficiency

# EVALUATION 1: Description Quality

From previous stage, we got

**20 Image + Best Desc.**

**3.evaluation**

selected by Cosine Similarity (Deep Learning method)

❖ For each image → Shown with 4 other similar images
Let each participant **choose based on a given clue**

**3 Conditions:** **Keywords** VS **Non-expert Descriptions** VS **Expert Descriptions**

❖ 24 participants → 2 Equal Group
Each group answers 10 questions of each condition

# Keywords

* 11. Please select the best image for this keywords: "myth/legend, history"



# Non-expert Descriptions

* 17. Please select the best image for this description:
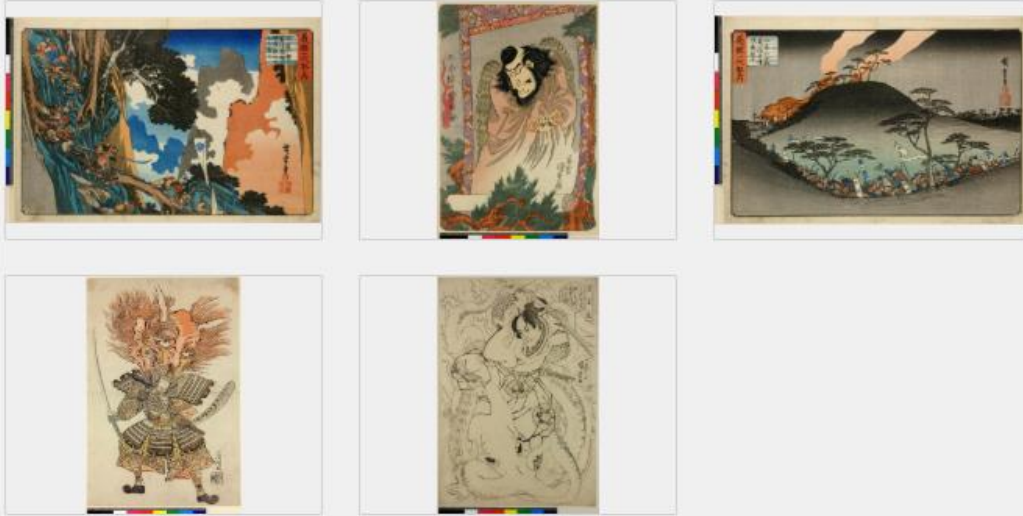"two woman are in the pictures. one of them is sitting and still fixing her appearance while looking in the hand mirror. The other one is standing and talking to the sitting one."
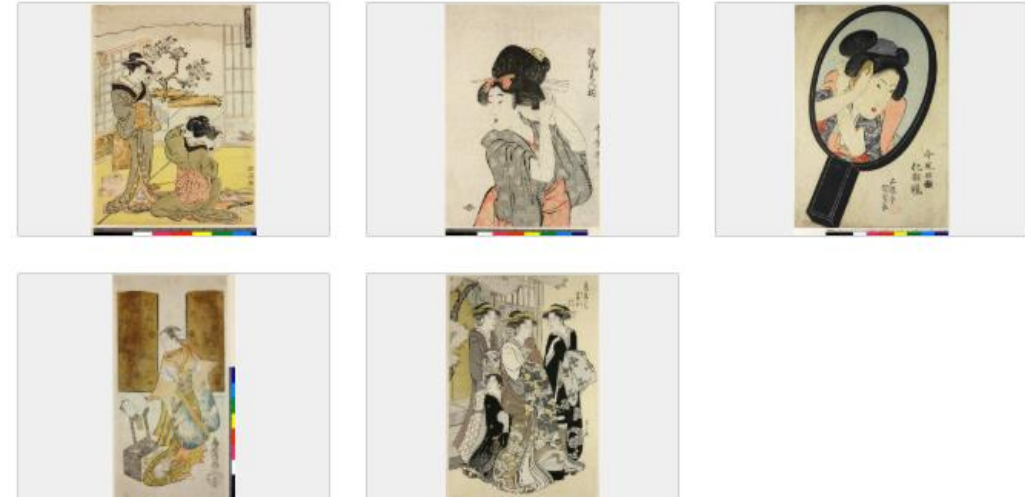


# Expert Descriptions

* 25. Please select the best image for this description:
"Colour woodblock oban triptych print. Travellers at Enoshima: Collection of elegantly dressed pilgrim travellers waiting at tea-stall at Katase Beach; seven women and one young man taking off hat, fanning breast, wiping perspiration, smoking pipe and re-tying sandal; more tourists watching boys swimming and looking across towards island; snow-capped Mt Fuji in distance. Signed, marked and inscribed."



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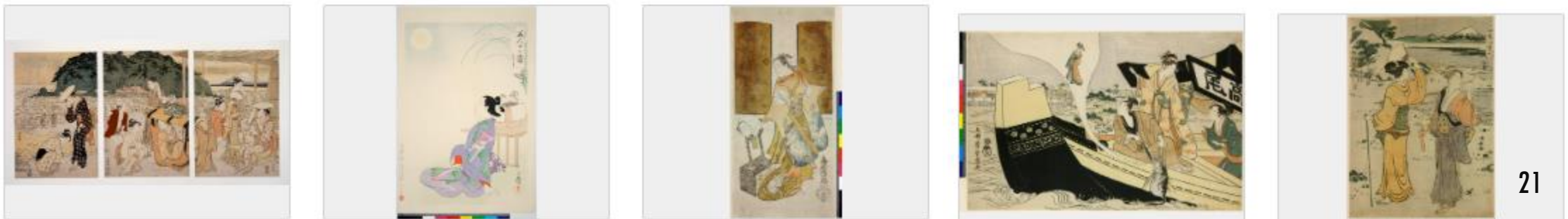
correctness & sufficiency

# EVALUATION 1: Description Quality

| | Keywords | Non-expert Descriptions | Expert Descriptions |
|---|---|---|---|
| Correctness | 50.7% | **92.9%** | 75% |

# EVALUATION 2:  Player Experience

❖ Questionnaire:   **Game User Experience Satisfaction Scale (GUESS)**

❖ 1st PX Experiment:

- 25 participants, Ritsumeikan University Student, 18 min

- most of the images to be randomly displayed at least three time
  (to evaluate the reward and penalty mechanisms)

❖ 2nd PX Experiment:

- 21 participants, Bangkok University Student, ~20 min

- increasing the voting time, added background music, etc.
  and we have publicized the game online

# EVALUATION 2: Player Experience

❖ **GUESS**

Game
User
Experience
Satisfaction
Scale

**TABLE I**
**GUESS QUESTIONS**

| Factors | Questions |
|---|---|
| 1 | I think it is easy to learn how to play the game. |
| 1 | I find the controls of the game to be straightforward. |
| 3 | I feel detached from the outside world while playing the game. |
| 3 | I do not care to check events that are happening in the real world during the game. |
| 4 | I think the game is fun. |
| 4 | I enjoy playing the game. |
| 5 | I feel the game allows me to be imaginative |
| 5 | I feel creative while playing the game. |
| 7 | I am in suspense about whether I will succeed in the game. |
| 7 | I feel successful when I overcome the obstacles in the game. |
| 8 | I find the game supports social interaction (e.g., chat) between players. |
| 8 | I like to play this game with other players. |
| 9 | I enjoy the games graphics. |
| 9 | I think the graphics of the game fit the mood or style of the game. |

Factors: (1) Usability/Playability, (3) Play Engrossment, (4) Enjoyment, (5) Creative Freedom, (7) Personal Gratification, (8) Social Connectivity, (9) Visual Aesthetics
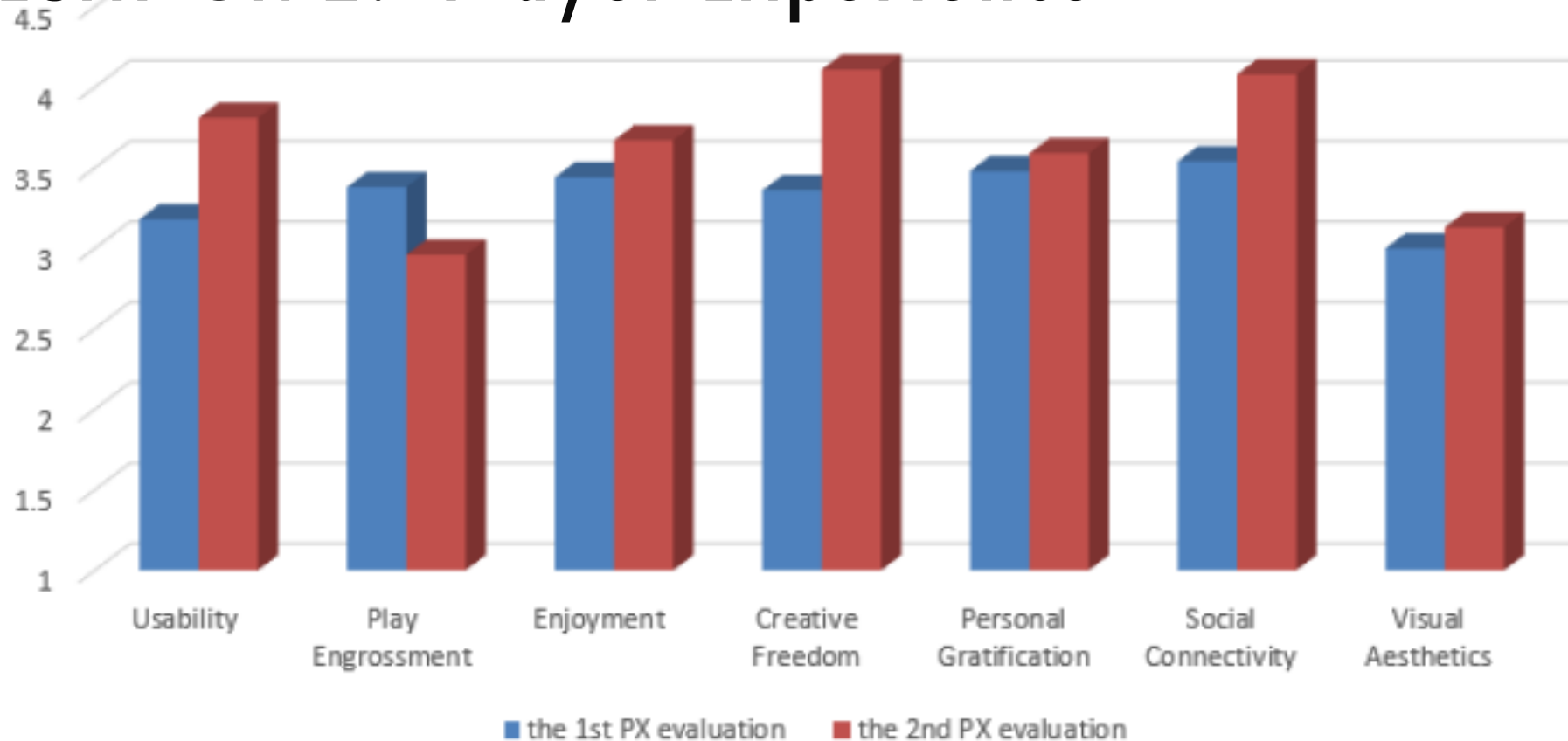
# EVALUATION 2: Player Experience



Fig. 4. Result of each satisfaction factor on JUSTIN game in the first control experiment and the second control experiment after publicizing

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# CONCLUSION

- JUSTIN, the first Audience Participation Games With a Purpose (APGWAP) for collecting Ukiyo-e descriptions, to be used in future systems.
- APGWAP can be effective in humanities research
- Non-expert description can be helpful.
- The system provides good gameplay experience.

# FUTURE WORK

❖ **Comments from the 2nd PX Experiment:**

- Support more languages such as Japanese, Thai

- Add functions to the chat bot to make it more interactive.
  - For example, do cheering after players win or create or vote a description to encourage them

- Improve graphics by using Unity to develop the game

- Add auto words correction so when players type wrong word or have typos, the system to automatically correct itself.

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https://www.twitch.tv/ch932

JUSTIN: Japanese Ukiyo-e Streaming That Improves Narrative