

# Drag A Star 3.0: An Audience Participatory Interactive Art

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## ABSTRACT

“Drag A Star 3.0” is site-specific interactive art which setup in a café umbrella context. Audiences were meant to sit down and relax under the umbrella while interacting with this piece. With their smart phone, audience able to generate their own unique design star and send it to the star field. Audience could even embed their star with a wish, just like the old myth of wishing upon a shooting star. Stars that being generated are stored in the web server database, it is then being retrieved and visually display as a star in the night sky. Thus, every star tells a story. Audience could catch the shooting star by just performing a simple dragging gesture and then able to read at others wishes, or even reply to the wishes. This art piece is a combination of different technologies which involve projection mapping technique display, mobile application, web-based messaging system and web server database. Every action by the users are stored in the web server database and all these actions would determine the visual component of the star field. This participatory social interaction between the audiences enable the connection of audiences from the past, present and future.

## CCS CONCEPTS

• **Human-centered computing** → *Collaborative interaction; Smartphones; Information visualization*; • **Networks** → *Mobile networks*;

## KEYWORDS

Interactive Artworks, Audience Participatory, Shooting Stars, Star Field, Smartphones and Mobile Applications.

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## 1 INTRODUCTION

### 1.1 Related Works

With the improvement and advancement of technology, it is understandable that artists nowadays are creating art pieces that able to push into new perspective and dimension. Over the past few years, data science had been trying to understand by the researcher for its implication in business marketing decision making [1], while it is now also a favored component by the new media artists. Artists collect data through different medium and then would have explore on it and turn it into an art. This can be greatly see in the web-art and network-art. Partly because of the trend of social media, user-generated contents turn into a key element for new media artist which then being used in collaborative art and participatory art.

### 1.2 Artistic Statement

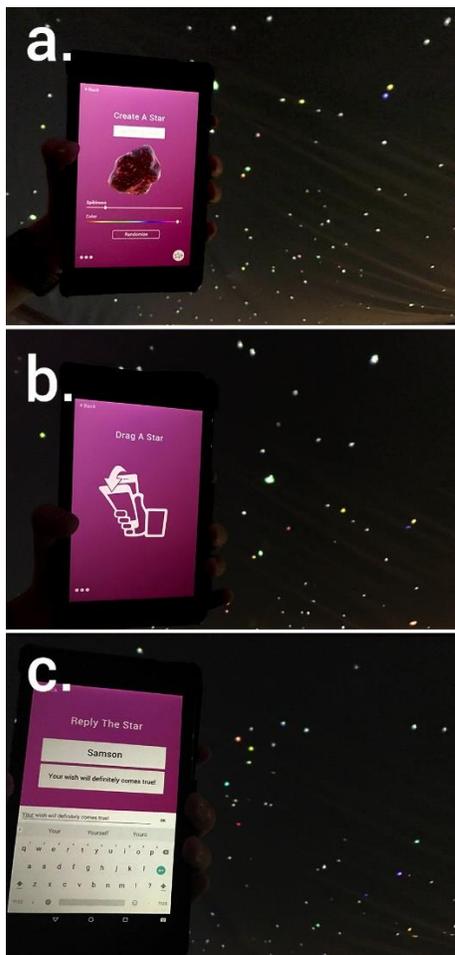
When is the last time mankind look upon the night sky and enjoy looking at the star scenery? When is the last time mankind saw a shooting star flying across the night sky and quickly make a wish? People are so often caught up themselves with the fast and busy pace of life and hardly stop down to take a look at the stunning nature night scenery. Not to mention most of the people living in the city and hardly see any star due to the light pollution. “Drag A Star 3.0” is to resemble this forgotten yet attractive and enticing star scenery to its audience. It is a site-specific interactive art which setup underneath a café shelter umbrella. It is meant to let the audience to sit down and have a drink while interacting with the art piece. This interactive art require audience participation in order for the star field to be complete. The stars on the star field are all generated by the audience themselves, which indicate the traces and marks that leave by the audience throughout the participatory interaction with the art piece. Every star tells a story. And in this piece, every star do archived a certain wish, hope, belief or faith by the audience. Audience able to generate their own unique star and embed it with their wish, send it up to the night sky. This was to remind the audience the old forgotten myth of making a wish whenever seeing a shooting star. It’s more than just a night sky full of stars, it’s a night sky full of wishes. These are stars that waiting to be heard, and if the audience catch the shooting star, then he/she is now a listener. Audience could read at the wish, and reply it back. If he/she is lucky enough, the star that self-generated would be able to catch back in the smartphone, and read at the replies. It’s an interactive art piece that not just connect between people and people, it also enable the connection

Check <http://smedia.ust.hk/dragastar3/> for the HD video of this interactive artwork.

of the past, present and future, much like today's social media. The audience were to decide, whether he/she want to involve in this art piece as the one who share, or the one who listen. By implementing 3 new novelties: i) café umbrella installation setup, ii) user-generated star and iii) crowd-generated star field projection into this interactive piece. It enable the art to resolve the connection between audiences through audience participatory social interaction.

## 2 THE ART AND AESTHETIC DESIGN

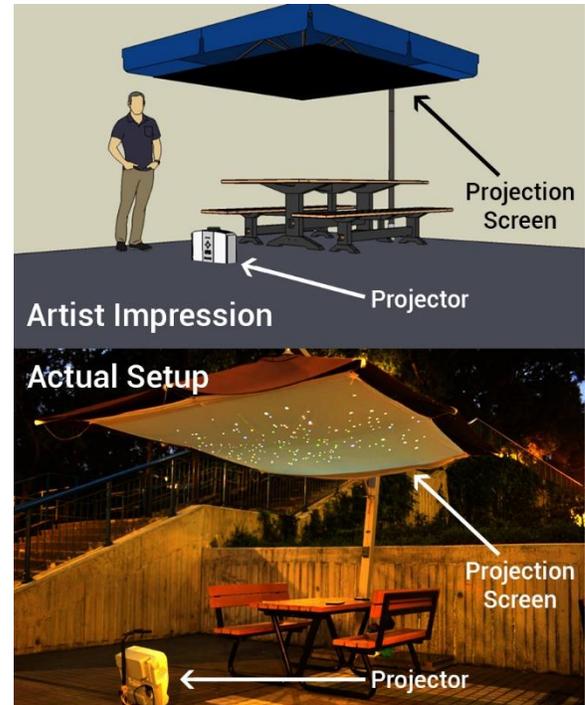
Drag A Star 3.0 is an art piece which greatly involve the audience and make them a co-author of the piece. All design process in this piece are centered on the audience. Fig. 1 shows how the audience interact with the art piece by using their smart phone. Audience could generate a new star (Fig. 1a), drag a shooting star from the star field (Fig. 1b), and audience could also send new wish or replying to the wish (Fig. 1c). The following sub-sections presented the art and aesthetic design starting from the physical setup, to smartphone application user interface, and lastly the crowd-generated star field.



**Figure 1: Photos of audience engage the interactive piece with smartphone application.**

### 2.1 Installation Setup

Fig. 2 shows the overall installation setup of the interactive art. Below explained the main components and equipment used in the installation setup.



**Figure 2: Diagram showed both artist impression and actual setup of the interactive art.**

*Café Umbrella:* This interactive art is a site-specific artwork which setup under a café umbrella.

*Audience:* Audience were to sit under the umbrella while engaging with this interactive piece. It were required them to use their smartphone in order to interact and generate content for the star field as showed in Fig. 1.

*Projection Screen:* A cloth was tied under the café umbrella which functioned as the projection screen. Star field is being projected on it which create the mood of looking up to the night sky.

*Projector:* Ultra short-throw projector is being used in order to fully project the “night sky”. It is connected to a CyPhy android box [5] with Wi-Fi connection.

### 2.2 User Participatory Design

The key interactive device for this participatory interactive artwork is smartphone. Therefore smart phone application user journey is 1<sup>st</sup> being discussed in the development stage in order to successfully engage the audience throughout the whole artwork experience. At the start of the journey, audience will be given 2 options to select. Audience are free to select any of the options

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because whichever choice made, it will eventually lead them back to the start. The user journey is designed as such so that it provides a seamless interaction flow to the audience (Fig. 3).

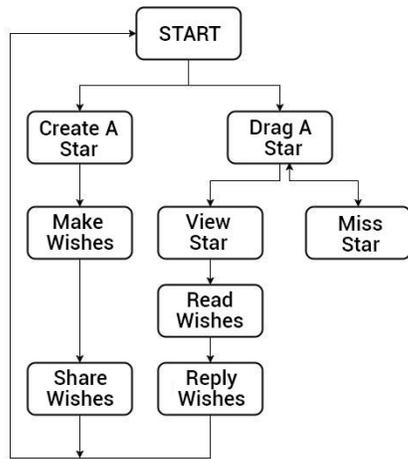


Figure 3: User participatory journey.

The smartphone application UI only consist of 3 minimal levels which enable the audience to learn quickly about the whole interaction as showed in Fig. 4. Level 1 is educating and choice making level. Level 2 UI is action and exploration level. Audience will perform the main tasks of the interaction and at the same time explore around the interaction process. Last level is the level of completion, audience will perform an action which complete their main task. By having only 3 simple levels which indicate distinctive and obvious purpose (Fig. 4), it would able to provide the audience with a smooth learning curve user experience (UX) which is a pragmatic quality for UX measurement [2].

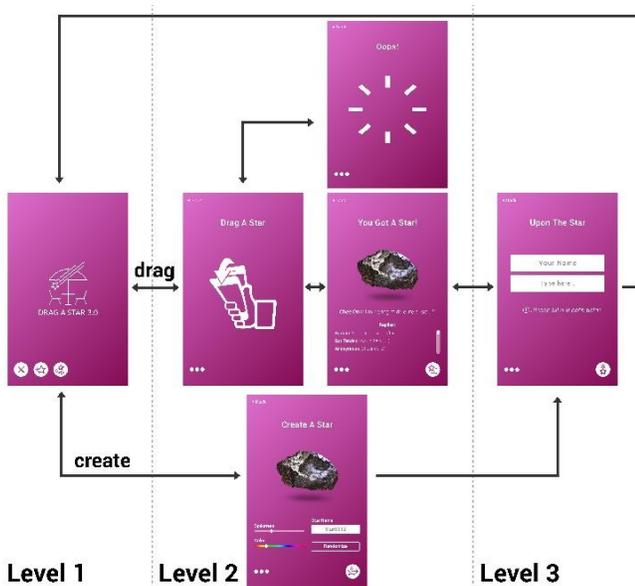


Figure 4: Mobile UI design in 3 simple levels.

### 2.2.1 Interaction Task 1 – Drag A Star

There are 3 UI pages for the task of drag a star. At the 1<sup>st</sup> page of drag a star, a very simple iconic instruction is being placed in the middle (Fig. 5a). Audience would take less than 3 seconds to understand about what should be done. After performing the drag gesture, it will depends on whether the audience success or fail, which will lead them to different page. If the audience fail, the UI page indicating the miss will pop out (Fig. 5b). This page will return back to the drag page automatically in 3 seconds if the audience did not perform any action. This automated back is effective at letting the audience know how to respond with the missed of catching a star. If the audience success in dragging a star, a UI page will followed in immediately showing the information about the star being dragged (Fig. 5c).

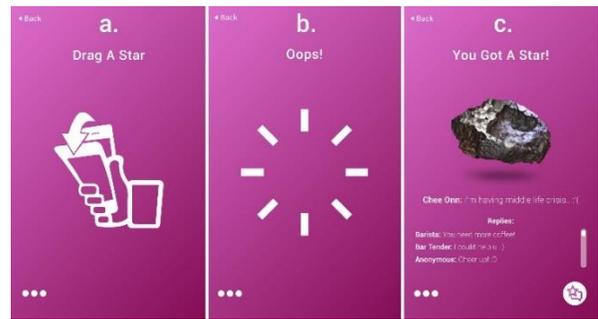


Figure 5: Mobile UI for star dragging task.

### 2.2.2 Interaction Task 2 – Create A Star

Create a star UI page is where audience able to play around and explore on the parameters provided. Only 2 sliders are placed in this page which accompanied with very layman label. Audience would quickly understand what the 2 sliders are about. The visual appearance of the star is changing real-time when the audience move the slider, this would provide a constant feedback to them without any delay. The audience are also given a choice to skip all the exploration by tapping at the “Randomize” button as seen in Fig. 6. This would randomize the slider value and give the audience convenience to proceed for the next interaction process.



Figure 6: Mobile UI for star creation task.

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## 2.3 Star Field Design and Composition

Star Field is the 1<sup>st</sup> visual component that exposed to the audience when approach to this interactive art. Therefore it is important to ensure that the star field is aesthetically pleasant and stunning in order to catch their interest. The composition of the star field is designed based on the balance of positive and negative space. The positive space refers to the key focus of a visual while the negative space refers to the background of a visual. In this case, the star is the positive while the night sky is the negative. It is crucial to strike the balance between this two components because audience are exposed right beneath of a star field screen, if the stars are over excessive and overwhelm, it would create a cramped and discomfort feeling. Fig. 7 showing the comparisons of the number of stars in the star field. Fig. 7a which provides more eyes resting space would look more pleasing to the audience.

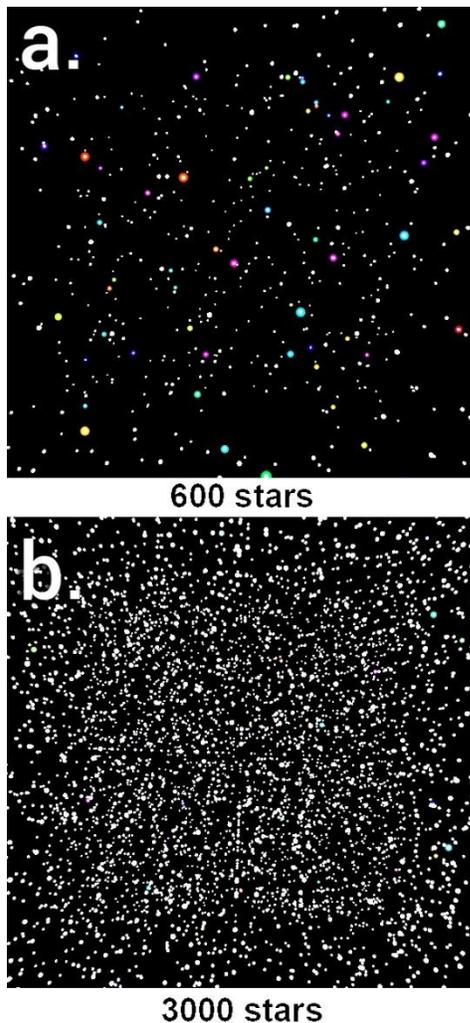


Figure 7: Comparisons of different total stars number in order to achieve the balance of positive and negative space.

## 2.4 Audio-Visual Cue of The Star

Different audio-visual cues are being implemented to the star during the audience interaction. Before each star started to fly over the screen, it will glow in the color of the star creator selected as showed in Fig. 8a. In this case, the star was previously generated in blue color by the audience. The view of the star field would slightly move and zoom in to the glowing star. This movement is used to guide and move the audience eye through placement of elements so that the audience eyes move towards the visual cue [6]. At the same time, it will be accompanied by an audio cue. These cues will signal the audience to anticipate for the shooting star and get ready to drag or catch it. This anticipation would excite the audience and motivates them to participate themselves into the interactive art piece. Furthermore, when a new star is being generated, audio-visual cue will be triggered as well. The new star will appear on the star field with a white twinkle together with an audio cue to notify the audience that their star had been sent up to the sky (Fig. 8b).

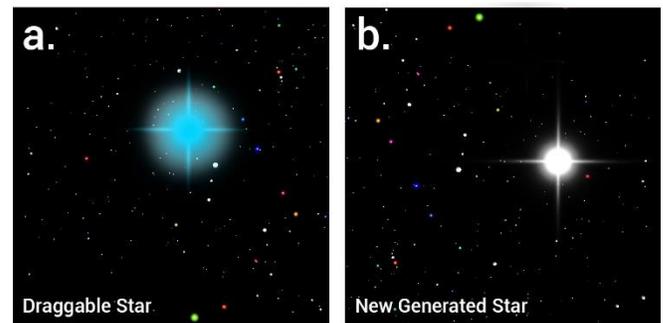


Figure 8: Screenshot of the stars giving visual cue.

## 3 THE ROLE OF TECHNICAL ELEMENTS

### 3.1 Smart Phone – The Interactive Device

The smart phone is the device where audience used to collaborate with this interactive art. This smart phone interactive art application enable the audience to generate new star, make a wish, reply wish and also drag the shooting star. The key element that making the drag gesture work is through smartphone accelerometer sensor data. Accelerometer sensors are believed to have a main role in future mobile market since the implementation by Nintendo and Apple [4].

### 3.2 Server and Database – The Brain of The Interactive Art

The online server and the database is the brain which makes the whole interactive art functions. When audience are interacting with the smart phone application, it will send all the data to the network through Wi-Fi connection. All the important data are then being stored in the database. The CyPhy android box [5] will be accessing the database and then retrieve and display it visually by

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projecting it through the projector. Recent study found out that meteorite are actually hard drive from space that could store where it had been travelling [3]. Similar concept to the star in the star field, it is like a media storage drive which stores important information such as the name of the audience, their wishes and parameters that decide the visual appearance of the star. When looking at the projected screen, other than a stunning night sky full of stars, it is also a night sky that is saturated with digital data.

### 3.3 Messaging System – The Connection Between The Audiences

Every star that the audience generate, it can be embed with a wish (Fig. 9a). Whenever the particular star is being dragged by the audience, the wish can be read. The audience can also reply to the wishes as well as showed in Fig. 9b. This messaging system is where the connection between the audiences established. It enables them to connect between the past, present and also future.

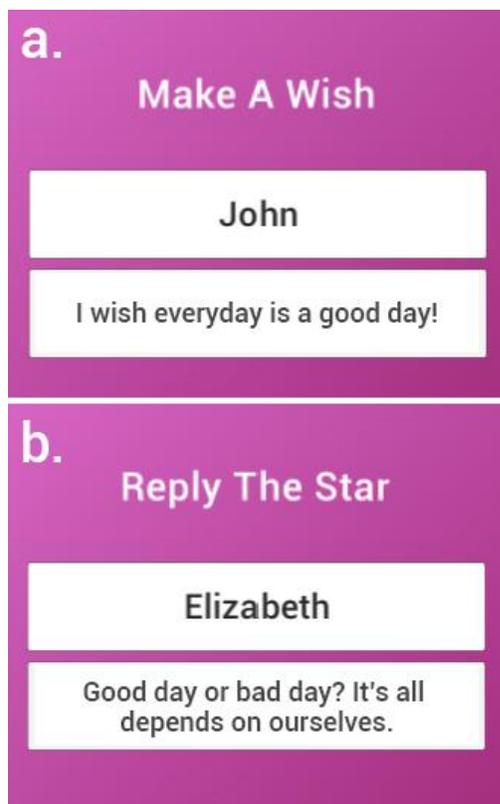


Figure 9: Screenshot of audience making a wish and replying to a wish.

### 3.4 Robustness and Transportability

The whole interactive art is designed such that it could be set up easily. The technical equipment are only the projector and CyPhy android box [5]. It could be connected easily by just a few cables. As for the interactive device – smart phone, it is a personal device that carried by the audience themselves. Any café and restaurant

which had a big shelter umbrella would be the ideal place to setup this interactive art after a piece of cloth is tied underneath the umbrella to function as a projection screen. Although this interactive art is designed and developed in Hong Kong, due to its transportability and portability, it is going to exhibit in an upcoming exhibition in Malaysia – International Multidisciplinary Media Arts Festival 2017 [7].

## 4 CONCLUSIONS

This interactive art installation tries to engage the audience with a new unique kind of setup. It invites the audience to participate and generate their own star, then share their wishes to crowd-generated star field projection. The star field visual component which greatly affected by the audience action is what enable the connection and collaboration. It is to develop a platform for audiences to have physical movement while having the authorities to determine how the art piece going to look like. To achieve the completeness of this art piece, user-generated content played the key role. It involve the audience from visual engagement to user collaboration interaction. Concurrently, the interactive art installation have great potential in implementing in a café and restaurant context.

## 5 ACKNOWLEDGEMENT

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