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“I was here”: enabling tourists to leave digital graffiti or marks on historic landmarks

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Abstract. Since ancient times travellers and tourists were carving or writing their names and messages on historic landmarks. This behaviour has prevailed to this day as tourists try to leave their marks at places they visit. Such behaviour, today often seen as vandalism, is particularly problematic since the society tries to preserve historic landmarks while graffiti often leave indelible markings. One solution to this problem is to allow tourists to write digital graffiti projected on historic landmarks and other public surfaces as an additional tourist offer. Projecting digital information on walls does not leave permanent marks while still allows authors to “physically” mark the place they visited. In this paper we frame our vision and highlight the approach we plan to pursue within the context of this topic.

Keywords. Digital graffiti; tourism; projections.

1 Introduction

Graffiti are a form of expression that can be carved or painted on walls or other surfaces. They can take many forms from simple written messages to elaborate drawings and are considered either as acts of vandalism [3] or admired as a from of art [4]. They exist since ancient times [1, 2] and can carry political, social, artistic or any other message. Graffiti are primarily associated with different subcultures such as hip-hop youth or street art movements. However, there is a group of graffiti makers that are often forgotten – tourists.

Since ancient times travellers and tourist were leaving marks and writings on sites they visited. This is manifested across cultures and covers simple inuksuit built by Inuit peoples for navigation and as a point of reference marking routes or sites, to scribbled messages on the walls of ancient buildings denoting ones presence and appreciation of the site. The later form can be seen for example on the walls of the Church of the Holy Sepulchre in Jerusalem scribbled by the crusaders and pilgrims (see left side of **Figure 1**) or on the Mirror wall in an ancient village of Sigiriya in Sri Lanka (see right side of **Figure 1**) featuring over 1800 pieces of prose, poetry and commentary written by ancient tourists between 600AD and 1400AD [2].

In a similar way, today’s tourists also exhibit the tendencies to leave their mark in places they visit. For example the breast of the statue of Juliet in Verona is showing prominent signs of wear by years of groping. Even more personal example of expres-

sion is leaving D locks with declarations and messages on bridges in cities all over the globe. While these are "socially accepted" marks, some tourists also carry out unacceptable acts by today's standards. For example scribbling ones initials on a brick of the Roman Colosseum can result in a large fine [6] or signing one's name on an ancient Egyptian's statue can result in an outrage of masses on social media [7].

Fig. 1. Left: Crusader Graffiti on the walls of the Church of the Holy Supulchure in Jerusalem.[1] Right: graffiti on the Mirror Wall in Sigiriya in Sri Lanka.[2]

One possible solution to prevent premanent marks on historic landmarks is to allow tourists to create their mark in a digital form and project it on a desired location of the historic site. Our idea includes wraping segments of historic objects with projected beams of light using mounted projectors which can be controled by the user through their mobile devices.

2 Related work

There are different ways of how digital technology can be incorporated into creation of digital content on a surface such as wall. The most common solutions include a dedicated large screen (digital wall) and a special input device of which location is tracked (as it moves in the air) and communicated to the system that produces the content on the screen. There are several commercial products available, such as Digital Graffiti Wall[3], YrWall[4] and Air Graffiti[5].

Another way of creating digital graffiti is by the means of augmented reality (AR). Cisco's mobile phone application called Digital Graffiti allows one to leave geo-positioned messages that other users can see only if they are physically present at that location and look through the camera lens of their smart phone. In a similar way DigiGraff allows "spraying" a geo located graffiti with a projector mounted on a mobile phone. Others can interact (with by using a projector) with a particular graffito only if physically present at that location [5].

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[1] Courtesy of "Victor" by Victorgrigas. Licensed under CC BY-SA 3.0 via Wikimedia Commons

[2] Courtesy of RomeshD. Licensed under CC BY-SA 3.0 via Wikimedia Commons

[3] Digital Graffiti Wall: http://www.tangibleinteraction.com/rentals/digital-graffiti-wall

[4] YrWall: http://thisisluma.com/yr/yrwall-digital-graffiti/

[5] Air Graffiti: http://fotomasterltd.net/products/digital-graffiti-air-graffiti-wall/

Graffiti Research Lab developed so called LED Trowies, which are made of a coloured LED and a magnet that can be attached to a ferromagnetic surface; positioning many of such Trowies allows one to create a grafitto made of LEDs. They also created a system called L.A.S.E.R. Tag that tracks the laser beam with a web cam and in its trail projects the beam of light. The simplest method is to project existing artwork onto walls as done for example at the Digital Graffiti projection art festival[6].

None of the presented solutions is particularly suitable for a system enabling a tourist to leave a digital graffito on a historic site because they either require special equipment (indoor screens, laser pointers, IR equipped input devices, pico projectors) or are visible just by means of a particular technology (i.e. AR).

3 Discussion

The basic principle of our proposal can be seen on **Figure 2**. We are currently building the app that is sending the content to a networked projector, which is projecting the image on a historic site in a contextually sensitive way, hence, the projection is mapped to the shape of the 3D structure it augments.

Fig. 2. The principle of how our idea would work in the real context.

However, there are several technical and research questions that need to be considered and studied before we commence studying the interaction within public spaces.
Technical questions:

- *Locality of graffiti.* The digital technology allows drawing of graffiti from a remote location and anyone in the world could leave a mark in a place they have not visited. However, this may dilute the appeal of digital graffiti to audiences at the physical location. As it is possible to track geo location of users, one could limit graffiti creation to only those physically present.
- *Inappropriate content.* Although, the idea can be used to propagate any content, it is primarily intended for tourists who commonly do not write messages with political, social or other such connotation. There are several ways to moderate graffiti: e.g. up or down voting, registering users, restricting graffiti creation to only organized groups of tourists, or restricting the making of graffiti from dedicated locally

[6] Digital Graffiti at Alys Beach http://www.digitalgraffiti.com/

placed devices (which would eliminate the need of public internet access, app installation, using ones own device, and would simplify moderation)

Research questions:

- *Multiple edits.* There are two implementing possibilities that need to be studied: allowing multiple users to draw at the same time (e.g. each one gets a piece of the canvas or draws on a dedicated layer) or reserving the time when one can draw the content.
- *Real time or commit based drawing.* One of the research questions is whether users would prefer creating the content on their devices first and only then submit it (e.g after they preview it by the means of AR) or edit it in real time directly on the wall while others can watch it changing?
- *Time allocation.* There are different possibilities to implement time allocation: all graffiti get the same time slot, a graffito is shown while the author is nearby, a graffito fades with time, etc. However, as they can be intended for the broader audience, we should investigate a way to selectively print graffiti or devise a way to cleverly select desirable objects (e.g. up or down votes as with moderation).

4 Conclusion

Paradoxically, whilst ancient graffiti are seen as a valuable window into the lives of past generations, many current graffiti are considered acts of vandalism. In the later, we are not discussing paintings on an underpass, even if these are threated as such by some, but rather for example defiling a facade of a historic landmark. Digital graffiti may be able to provide sustainable means of fulfilling tourists' wish for marking a place they visited. In addition, transferring the graffiti in the digital domain can allow sharing them with others on social media, broaden the graffiti audience, and foster additional conversations online. This can provide indirect advertisement for local communities and promote touristic places to a wider public. In addition, the recorded history of changes could provide a database of tourists' graffiti of which content could be further studied.

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