

DroneLandArt: Landscape as Organic Pervasive Display

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ABSTRACT

This video illustrates an example on how arbitrary landscapes can be used as organic display surfaces for situating real world augmentations in novel ways, enabling new design dimension in seeing and perceiving the world from above. As drones with integrated cameras are becoming more popular and may soon be ubiquitous, seeing the world from above may interest more and more people. The presented video demonstrates a novel approach for creating large-scale art works that are built into landscapes. We call this DroneLandArt. In the video a green grass field is used as a large-scale display surface for a huge smiley, made with the help of a video-enabled drone and a lawn mower. In this paper, we discuss motivational aspects of the work and the creative process involved.

Author Keywords

Drones; UAV; Landart; Pervasive display; Landscape, organic display.

ACM Classification Keywords

H.5.2 [Information Interfaces and Presentation]: User Interfaces – *evaluation and methodology, input devices and strategies, interaction styles*. H.5.m [Information Interfaces and Presentation]: Misc.

INTRODUCTION

Crop circles have raised interest amongst people for a long time, have baffled experts, and have fuelled rumors of alien visitors. Most crop circles however have relied upon careful planning. In contrast, our DroneLandArt approach demonstrates an easy and simple drone-aided way to create large-scale landarts e.g. the aforementioned smiley engraved into grass (see Figure 1) in less than 30 Minutes by one single person. This requires a lawn mower and a video-enabled drone, transmitting real-time video footage to a mobile phone app carried by the drone pilot.

Drones in connection to pervasive displays have been explored before [4] [6], as well as drones serving as

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personal tool in engaging leisure activities [2] [3] or as navigation aid [1].



Figure 1 - Landscape as organic display showing a smiley created with the help of a drone.

MOTIVATION

The motivation of this work is to interact with the physical environment [5] in new and technology-inspired ways, by harnessing the landscape as a stage for large-scale artistic expression. At the same time we wanted to integrate natural objects into ones own work, a typical approach in Landart, an art movement in which landscape and the work of art are inextricably linked.

CREATIVE PROCESS

The first step is drawing the outlines of a smiley onto the mobile phone screen with a pencil (see Figure 2). Therefore we use a transparent foil for protecting the display and a pencil with water-reducible ink. This enables a rapid prototyping.

In a second step the video-enabled drone is set to hover over the area of interest retaining the height and position over the ground. In our exemplary use case, the two trees - seen through the live-view on the mobile phone - had to match the position of the eyes of the drawn smiley on the phones' screen (see Figure 2)

In a third step, the drone pilot walks into the area of interest, therefore seeing herself or himself walking in the live-view which is provided on the mobile phone. All the user needs to do now is walking the path in the grass, matching in real-time the outline of the art piece on the

phone screen. While doing so, every few meters a wooden stick needs to be hit into the ground (see Figure 3).



Figure 2 - Outlines of a smiley onto the mobile phone screen with a pencil.

In our example the wooden sticks are mapping the outline-circle of the smiley around the trees. The sticks are used as visual markers and designed in a way that they can easily be perceived through the camera image that is taken by the drone and streamed to the mobile phone.



Figure 3 - Wooden sticks as visual markers mapping the outline-circle of the smiley around the trees.



Figure 4 - Lawn mower used to cut the grass along the visual markers.

In a final step a lawn mower is used to cut the grass along the visual markers (see Figure 4). Therefore, the user is driving the lawn mower connecting the visual markers to match the outline on the mobile phone. In case the user is not sure which markers to connect, the user can compare the physical position with the position on the mobile phone.

CONCLUSION

In this paper, we presented a method for drone-aided creation of Landart named DroneLandArt. It allows the creation of large-scale works on arbitrary landscapes using grass fields as organic media display. However the use of the presented concept is not limited to the described DroneLandArt. One can envision deploying it for visual storytelling, e.g. a village's outskirts could become a huge info graphic, or it may inspire a new visual language. For future work, we envision creating an interactive mobile application that facilitates creating art pieces by selecting pre-determined shapes and placing them on the screen. Further, we want to combine the wooden sticks with QR codes, that the application can perform a quality control.

View the video at: <https://youtu.be/gO6pnCP26Rg>

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