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Graffoto: A Social AR Graffiti Platform

Graffiti is a common sight in many urban areas, and a frequent complaint of property owners, local governments, and other such stodgy individuals the world over. Removing or painting over graffiti takes time, effort, and money. Graffiti may have gang associations, and its presence is often seen as evidence of urban blight -- Yet it can also nurture a vibrant street art community, with graffiti artists such as Banksy even achieving international success based off of their works. So how do we balance enabling the artistic vision of street artists with the rights of property owners and community members?

Graffoto aims to do just that.

Overview

Graffoto is a tool for graffiti enthusiasts to display and share their works of art without running afoul of property owners or legal problems. *Graffoto* creates a virtual world in which graffiti can be created and shared. When using *Graffoto*, artists can go to any location with a large, flat surface and start a 'Graffoto Wall'. Then, using AR technology, the surface can be graffitied in real-time on their phone screen. Graffotos are stored in the cloud, and any app user can come add their own contributions to the wall. When the other *Graffoto* users near the location of a Graffoto wall, they can use their phone's camera to see the previous Graffotos on nearby flat surfaces. *Graffoto* doesn't just allow for a safe, legal way to 'graffiti' anywhere, but can also provide additional functionality, such as saving a user's previous graffiti contributions, and allowing for the modification of or addition to existing pieces without destroying the original.

Other Graffiti-related apps exist on iOS and Android, bust most are variations on image editors. The most comparable alternatives we found were *That Graffiti App* (Android), which allows users to edit and share pictures with graffiti-styled text, and *Graffiti Unlimited* (Android/iOS/Web), the most similar offering, which allows users to incorporate their own graffiti-styled images into videos of existing locations and vehicles. The overall goal of our app -- to provide a fully-featured, alternative-reality alternative for physical graffiti -- has not been previously explored or attempted, as far as we can tell.

Graffoto also offers opportunities for monetization through integrated advertising, while keeping the end-user experience free. In-app custom Graffotos could be sold to corporate customers, and seamlessly be displayed to end-users at designated locations.

Technology and Implementation

Many of the elements of this app are already well-demonstrated and widely used, including mapping functions (implementable through the Google maps API), and the saving and sharing of user contributions, which would be achieved through an SQL database server. The AR features present the most challenge, but powerful and well-maintained libraries exist for AR implementation on android, including ARToolkit and DroidAR. Parts of the Graffoto editing experience may need to be created fully by hand, as while image editing SDKs do exist, these may not have appropriate functionality for AR applications. Using existing technologies, we think it should be possible to fully realize a limited version of Graffoto in our ten-week schedule.

Risks and Challenges

Undertaking any large project always has risks, and synthesizing multiple complex technologies increases those risks. This project in particular requires the use of AR libraries that team members may not be familiar with, and which may have a high learning curve to successfully utilize. The project also requires some level of consumer adoption to become a viable product. Few initial users means few interesting Graffotos, and less incentive to use the app. Options exist for managing project complexity should the AR prove too complex to implement, including changing the project to simply target the editing and sharing of Graffoto layers on top of photos, rather than projecting Graffotos in real-time onto nearby walls.