Forge API Project Statement

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I. Abstract

Group 20s project branches from an Autodesk prototype project called Vrok-It, which is a simple web-based 3D model viewer and mobile virtual reality (VR) explorer. Group 20s project will expand upon its ability to display uploaded 3D models in browser and in VR, and improve its accessibility. Conventionally, viewing 3D models in VR is a challenge if you have model files on many devices, or have a headset that only works in conjunction with a smartphone. Group 20s project aims to do this by utilizing a web-based software that uses the features of the Autodesk Forge API. The project will also be expanded with new ideas and stretch goals as the project is developed.

II. Problem Definition

With a lower cost of entry to VR, many more users are now able to take advantage of these technologies. For example, Android smartphones are now supporting VR as well, potentially introducing millions of users to this new front. We see an opportunity to enable users to share simple 3D projects in a way that is both new and familiar, and allows for modern VR technologies to be applied.

This project would appeal to a wide audience as it will be freely available on the internet. Engineers, 3D artists, students, or anyone who can make use of 3D models. There are many people that could benefit from a software that would easily allow them to view models in both a 3D and VR environment. Currently However, most of the CAD software that is available can be prohibitively expensive and most people that are not experienced with using CAD software find it very difficult to use. These people most likely wouldnt have or want to take the time to learn the software just to view a few files. Additionally, there is also not a lot of software available that allows users to easily and affordably go between viewing their CAD files in a 3D model viewer and on a VR device. Using the website and a VR technology, users could take any CAD projects they have, instantly upload them into a 3D model viewer as well as have it viewable on their 3D device.

However, each different VR enabled device can operate at a different optimal specification depending on the hardware that it is using. With so many different devices it is hard to know exactly what a user would be able to display on their specific device. Other performance limitations are influenced by larger and more complex models that are very detailed or have many of different parts can take a lot of effort to render in 3D. If a device cannot meet the requirement of the VR solution, then the experience of the user would be negative. Most users do not want to have to worry about this and just want the software to make it work for them on the device they have.

III. Proposed Solution

If approved, we will be working from the Vrok-It project that was started by Kean Walmsley, Lars Schneider, Oleg Dedkow. By forking Vrok-It, we will implement our own changes to make the site more

accessible to users and to their hardware solutions. To make the project more accessible we would need to enable Vrok-It to determine what type of device a user is currently connected to and using. After the software knows what device the user will be using it could then begin to determine the different ways in which it could optimize the users VR experience. We would also like to ensure that if a model is too large or complex, the program will alert the user.

Another proposed method for improving performance is to develop software to determine if the model that is being uploaded has many internal components that cannot actually be seen by the user in the VR environment. If this is the case then the software would then remove these components from the model prior to being viewed in VR, increasing the ability of the device to display the model. We would like to develop these adjustments to remove many roadblocks from viewing a 3D file in VR. By doing this, we hope to allow users to become more interactive with their work and further drive creativity.

Beyond our initial goal of improving the experience, we will also be developing additional goals based on our progress, and feedback from our client.

IV. Performance Metrics

Initially, we hope to take a deeper look into Vrok.it, and focus on improving usability on more devices and hardware. Our goal in mind for this objective is to implement a solution to improve performance on lower-spec devices. When viewing models there should be a smooth framerate in order to have a good viewing experience in VR, so maximizing our performance is essential on those devices. The finished project will be able to make suggestions on what the users object quality should be based on the device that they are currently using. We hope that we will be able to demonstrate the project using a VR or augmented reality device, and the project site.

Patti Vrobel Date

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