Project Statement – Forge API Exploration Project

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Abstract

Group 20’s 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 20’s project will expand upon its features and functionalities on a new website, with a focus on utilizing the Forge API. 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 20’s project aims to do this by utilizing a web-based software that uses the Forge API in conjunction with Amazon Web Services. The project will also be expanded with new ideas as the project is developed.

Problem definition

Many new devices are now supporting VR but each device operates at a different optimal specification. Depending on this specification the level of detail a model can be displayed in varies. Lower end devices would struggle or outright could not display objects or models that are too big or have too many polygons or internal parts. There is currently no way to adjust the polygon count of existing 3D models easily. There currently is no place where people can easily go and view their 3D models in both a web environment as well as in a VR environment.

Proposed solution

One of the goals of the project is to increase functionality and optimize performance on an increased array of devices. We are currently planning to solve this with polycount limits based on if a user is working on web or if they are on mobile, and if they are using a virtual reality solution in order to create the best possible experience. Essentially, we hope use this to improve the usability of the software and ensure a smooth experience. We plan on seeking out new methods of improving performance, such as removing portions of a model if parts are too small. We can measure things like framerate, stability, and processing times which can later be used to optimize the software.

Performance metrics

When viewing models there should be a smooth framerate in order to have a good viewing experience. 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.