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Term Project Competitive Analysis

* **THREEJS.ORG:**Threejs.org is an online 3D model creator/editor. It shines with its lightweight build and accessibility. I would like to implement such accessibility to my own application too. The website is easy to access and easy to start working on. Similarly, even though my application won’t be web based, I want my application to have a fast boot time and a simple UI. The 3D editing and manipulation of objects are accomplished through the usage of GUI elements that are integrated into the 3D display, such as the arrows and circles you get to drag around to move and rotate a given object. My project, most likely, will not have such integrated feature because they would take a lot of time to implement. Instead my project will feature a vertex editor that will allow the user to edit every vertex one by one.
* **AUTODESK MAYA 2016:**The products of Autodesk are known for their wide usage in professional areas in animation and game development. Hence, their products feature a wide range of tools and utilities. All these utilities inevitably lead to a very complex GUI that is hard to get your head around. It is not so straightforward to simply edit any file. It takes several weeks of training to get used to the UI and the features of Maya, one of their products. Even though Maya allows its users to do countless intricate manipulations to their files, all these abilities bring Maya down in the accessibility chart a significant amount. My project will not be featuring the classic 3D manipulation techniques that are seen in Maya in order to make the application more accessible to the regular user and to make the application more lightwieight.
* **MeshLab**MeshLab is another advanced 3D editor with a variety of features. The two features that interest me the most are the 3D printing support and the geometric simplification feature. The 3D printing support would be a nice implementation for my own project as it would allow my user to quickly receive a 3D printable version of a given object and quickly edit certain vertices if they do not like how they appear on a 3D print. While vertex manipulation can be quite a hassle, my application would allow the user to simply edit the coordinates of any vertex and see how it reflects on a 3D printer. The geometric simplification feature in MeshLab is mostly used to reduce exported file size. I plan on using this feature to allow my application to render complex 3D objects that have a lot of vertices and faces easily. The geometric simplification MeshLab uses is based on the idea that you can merge similar close by faces into one face and decrease the amount of faces the renderer has to go through every iteration. I hope to devise my own simplification algorithm so that I can render complex objects without needing to manually decrease their vertex or face counts.
* **TinkerCAD**

TinkerCAD is another online 3D editor. It is made by Autodesk but in order to make it lightweight and compatible with web browsers they have significantly decreased the amount of features and made a much simpler UI. TinkerCAD has a built in dynamic lighting system that creates shadows for and shades the faces of objects as you edit them. While this looks very nice on the editor, it is very hard on your computer. Even though it is a nice little feature I would not be adding such visual effects to my projects because they would significantly reduce performance. A feature from TinkerCAD that I am considering adding to my project is the small tutorial dialogues that pop up when you first enter the website. Small speech bubbles pop out from important buttons and fields explaining what they do and how to use them. I might add similar pop-ups that appear when the program is first booted. This might look better than a large piece of help text and would definitely increase user-friendliness. Not only would the help be integrated into the software itself, the user would have to go back and forth between the help window and the editor window to figure out how to use certain functionalities.