**# CAD Model Viewer**

**## Links**[**#**](https://www.matthewgreen.gg/cad_model_viewer.php#links)

* [Personal Git Repo](https://git.matthewgreen.gg/matthewgreen/CADModelViewer.git)
* [GitHub Repo](https://github.com/greenmatthew/CADModelViewer)

**## Content**[**#**](https://www.matthewgreen.gg/cad_model_viewer.php#content)

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**## Purpose**[**#**](https://www.matthewgreen.gg/cad_model_viewer.php#purpose)

**This is a prototype application being made for the Mechanical and Aerospace Engineering department’s Introduction to Engineering Design courses at the University of Texas at Arlington.**

**## Summary**[**#**](https://www.matthewgreen.gg/cad_model_viewer.php#summary)

It is a learning application, made in Unity, intended to be a companion application to the current curriculum of Introduction to Engineering Design’s current curriculum. The benefits of this application and the fact that it is VR, is that it is more interactive, immersive, and easier to have complete focus on learning as you are completely isolated from the real world distractions when inside a VR headset, as opposed to a textbook or a 2D application.

It is planned to work for the SteamVR and Oculus (Meta) platforms on Windows, MacOS, and Linux for PC VR headsets, the Oculus platform again on Android for the Quest and Quest 2 standalone VR headsets, then finally the Google Cardboard platform on Android and iOS for phone VR headsets. So, students do not even need a dedicated VR headset, they can just use their phone with an inexpensive cardboard phone headset.

**## Scene System**[**#**](https://www.matthewgreen.gg/cad_model_viewer.php#scene_system)

**Upon opening the application, you will be greeted with a menu where you can open, download, or delete scenes. These scenes are a model or a few models, accompanied by a video. A scene is a lesson for a student. For example, if the lesson is about threaded holes, you may have a model with a threaded hole, then another model that is a cross section of the first model, with a video talking about the topic. You can pause and play the video at will. You can translate, rotate, and scale the models. You can hide one or both models. We are working to get more advanced scenes working, such as model’s with animations, so maybe in the future you could see a screw torquing into the threaded hole.**

**New scenes can easily be made available to student’s because they can just download new ones straight through the application. They do not need to update their application just to get new scenes. The scenes could also in the future include meta data about the course and instructor so the scenes available to the student are only applicable to them.**

**Conclusion**[**#**](https://www.matthewgreen.gg/cad_model_viewer.php#conclusion)

While this project is still ongoing, I will talk about the current build of the application. It is a well-polished and fluid experience. It is working for all the platforms we planned to support, however, exact devices and operating systems have still yet to be built for and tested. We could potentially start using the application for a limited number of devices at first to start getting user feedback and testing its purpose as a learning companion application.

**## Future Work**[**#**](https://www.matthewgreen.gg/cad_model_viewer.php#future_work)

* Start making real scenes for the application, so that students can start using it.
* Import whole SolidWorks assemblies to Unity, that is importing model or models, with working textures and animations.
* Get all platforms with all operating systems.
* Add Oculus (Meta) Quest hand tracking as an alternative to using controllers.
* Switch from XML to SQL databases for storing scene meta data. SQL will make things a whole lot more dependable and implementation less esoteric. Anyone who knows SQL could easily modify or add new meta data to scenes. As well as make it easier to scale to more than a single instructor or class for the application.
* Possibly make a custom background or backgrounds. Currently the application still uses the Google Cardboard Sample scene’s background. While it looks great it may be nice to have something else available to choose from.
* Add accessibility and quality or life settings.