

Snapshot Objectives

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1 First Checkpoint: Base Program

We want to recreate UnBox3D, a program that takes a 3D model and allows the user to simplify it before exporting it in a 2D layout for reconstruction. This objective adds the starting point of our program. We will add a user interface that welcomes the user, which will contain an "Import" button and a viewport region. They do not necessarily need to work at this stage, but simply act as a placeholder to give us some clarity on how the project will be laid out so we can start making progress on the back-end functionality in the next snapshot. This phase will be just 2 months out of our 12-month development timeframe.

2 Second Checkpoint

At this stage, we've added a basic UI and it's time to integrate the Import function into our project. Using OpenGL, we will enable the program to render any imported model that comes in .obj format, for simplicity. Assimp will be used to parse the data from the imported model and OpenTK will act as a wrapper so that we can work with OpenGL in C#. This phase will take 5 months of our development timeframe.

3 Third Checkpoint

Next, we need to add an option to simplify the model—a fundamental feature of UnBox3D. We will do this by allowing the user to delete objects based on their bounding-box size, which would make smaller details be removed. In addition, we would allow per-object simplification by using Blender's decimation modifier. This phase will take 3 months in our development timeframe.

4 Final Checkpoint

With two months remaining, we have added most of the program's required functions. We will now add the option to unfold a model. This will work by taking the simplified model and passing it through Blender so it can be exported in Blender's paper model exporter. This can be done via Blender's Python API in a simple script. Once we complete this task, we will dedicate the remaining time to polish the UI and revise the program for edge cases.

5 Conclusion

Overall, we are satisfied with the project. It still needs some work, but it has successfully matched the target product's basic functionality.