Deliverable: UML Documentation

Description: Series of UML documents presenting the software of the project in activity, architecture, state, and class diagrams.

Status: Achieved

Note: Removed class diagram since the production method shifted from an object-oriented approach, resulting in class diagram being not applicable to the project.

Deliverable: Software to produce 3D models from images

Description: The system shall take series of images and produce a 3D model of the space. The system shall cluster images to create models of objects then use the related images in multiple clusters to position the models in relation to one another.

Status: Partially Achieved

Note: The system to separate then reconnect multiple models was not able to be realized due to time constraints. The current system can generate a model for a series of images of the same subject, which is a more standard use case for the system. There are some major issues that need to be addressed for the system to be effective, namely there appears to be camera drift influencing the output point clouds.

Deliverable: Graphical User Interface

Description: A GUI that allows the user to interact with the application in an effective, easy-to-learn manner. The GUI shall include a way to reposition and annotate the model.

Status: Partially Achieved

Note: The GUI allows the user to interact with the application in an effective manner but does not have the capacity to annotate the model. The GUI must use the matplotlib and tkinter to produce an embedded environment to interact with the model.

Deliverable: Model Encoding

Description: The system shall allow the user to save their model to several commonly used file types to be compatible with other software.

Status: Partially Achieved

Note: The system can encode the model to the Polygon (.ply) and Point Cloud Data (.pcd) formats. The system will be able to encode the model to Object (.obj) and Stereo Lithography (.stl) files with the integration of the mesh creation module. Some progress had been made, but not enough to sufficiently fill the demand. Other common file types like Computer Aided Design (.cad) require additional translations to be created.