**Project Description**

The UNCC_HABIT project consists of evaluating 10 conceptual layout designs. The designs were optimized using MATLAB and given to the team for evaluation. The goal was to produce a virtual reality environment that allowed users to access the various layout designs. The implementation of the 3D models into the VR environment was to be used to collect data of the human interaction with the layout designs and run a statistical analysis.

**Conclusion**

The UNCC_HABIT team could not find a significant regression model based on the data collected. The best model used Layers as the dependent variable and only explained 26.6% of variation around the mean. By looking at the residuals plots below, it shows that the data collected is not a good candidate for regression. However, other data analytical models could better show relationships between the different aspects of the project.

**Data Collection & Analysis**

FlashForge Creator Pro 3D Printer

3 variables were used to collect data from the 3D printer, which were print time, amount of waste, and number of layers in the model. Estimated print time and amount of material used was given by loading each model into the 3D printing software.

iMotions Eye Tracker

In an attempt to determine model preferences, a slideshow with two models on each slide was played for the user while tracking their eye movements.

Unity Virtual Reality Environment

The tasks that users had to complete were done in random order to decrease any possible learning effect. The situational awareness question was used to determine if the user paid attention to aspects of the model outside of their given task.

**Analysis**

The eye tracking and VR data were separately paired with the 3D printing data in Excel. Multiple regressions were run in an attempt to show correlations between the different aspects of the project. The best models are shown below.

**For Future Research**

If the project was going to continue, there are a few recommendations to consider:

- Define more variables for data collection such as, number of entrance/exit holes, etc.
- Explore variable transformations within the variables (i.e. log).
- Use other methods than regression to reveal relationships such as, factorial design.