

Appendix A: Configuration

```
#+ require_libraries, echo = FALSE, include = FALSE
# Load Libraries
require( rgl )
require( ggplot2 )
require( grid )
require( gridExtra )
require( purrr )
require( tibble )
require( lattice )
require( png )

# Paths and Files
FIGURES_PATH <- './images/'
STEREOLITHOGRAPHY_FILE <- './R/stereolithograph.stl'
MODEL_FILE <- 'model.RDS'
PERIMETER_FILE <- 'perimeter.RDS'

# Scaling to Real-World Units
SCALE_FACTOR <- 8.0 * 25.4

# Names for convenience and readability
X_AXIS <- 1
Y_AXIS <- 2
Z_AXIS <- 3
axes <- 1:3
axes[ X_AXIS ] <- 'x'
axes[ Y_AXIS ] <- 'y'
axes[ Z_AXIS ] <- 'z'

name_axes <- function( m ){
  colnames( m ) <- axes
  m
}

# Wireframe parameters
STRIPE_WIDTH <- 0.001
STRIPE_TOL <- 0.0005
BASE_RADIUS <- 0.3
WIREFRAME_HEIGHTS <- seq( 0.10, 0.60, by=0.05 )
POINTS_ALONG_X <- seq( 0.20, 0.80, by=0.05 )
```

```

# Different ways of looking at the model
TOP_VIEW_A      <- viewpoint( list( theta=  0, phi=  90, fov=10, zoom=1 ))
TOP_VIEW_B      <- viewpoint( list( theta= 90, phi=  90, fov=0, zoom=1 ))
TOP_VIEW_C      <- viewpoint( list( theta= 180, phi=  90, fov=0, zoom=1 ))
TOP_VIEW_D      <- viewpoint( list( theta= 270, phi=  90, fov=0, zoom=1 ))
BOTTOM_VIEW_A   <- viewpoint( list( theta=  0, phi= -90, fov=0, zoom=1 ))
BOTTOM_VIEW_B   <- viewpoint( list( theta= 90, phi= -90, fov=0, zoom=1 ))
BOTTOM_VIEW_C   <- viewpoint( list( theta= 180, phi= -90, fov=0, zoom=1 ))
BOTTOM_VIEW_D   <- viewpoint( list( theta= 270, phi= -90, fov=0, zoom=1 ))
BACK_VIEW       <- viewpoint( list( theta=  0, phi=  0, fov=0, zoom=1 ))
FRONT_VIEW      <- viewpoint( list( theta= 170, phi=  0, fov=10, zoom=1 ))
LEFT_VIEW       <- viewpoint( list( theta= 260, phi=  0, fov=10, zoom=1 ))
RIGHT_VIEW      <- viewpoint( list( theta=  90, phi=  0, fov=0, zoom=1 ))

TOP_VIEW        <- TOP_VIEW_A
BOTTOM_VIEW     <- BOTTOM_VIEW_A

STANDARD_VIEWS <- list( LEFT_VIEW, FRONT_VIEW, TOP_VIEW )

```
