1 INTRODUCTION
This supplemental document provides details on the various steps of our approach. Most of these are heavily based on standard methodology in the literature, but some adaptation was required to our specific problem.

2 EYE TRACKING DATA DE-PROJECTION
The eye tracker yields time-coded [x,y] coordinates of fixations in the [0,1] range. To identify which object was fixated in the game, we de-projected the eye-gaze space [x,y] coordinates in the frustum of the participant’s dominant eye. A ray was then reconstructed originating from the dominant eye camera center and passing through the de-projected eye coordinates. The ray was advanced through the scene. The first non-transparent 3D model triangle intersecting the near clipping plane at \( d_{\text{left}} \) distance left of \( LL' \) and at \( d_{\text{right}} \) distance right of \( LL' \). Given the triangles \( ALL' \) and \( BLL' \) we find that:

\[
a = r_{\text{aspect}} C \tan \frac{\theta_{\text{FOVy}}}{2} \quad \text{and} \quad \frac{d_{\text{left}}}{b} = \frac{d_{\text{right}}}{c} = \frac{D_{\text{near}}}{C}
\]

By interchanging \( b \) and \( c \) we estimate parameters for the right frustum \( ARB \).

The image disparity \( p \) of a vertex with scene distance \( w \) is positive when the object is behind the virtual scene, and negative otherwise. For this monoscopic frustum let us denote the Field of View (FOV) angle along the y-axis as \( \theta_{\text{FOVy}} \) and the aspect ratio of the mono-frustum as \( r_{\text{aspect}} \).

3 STEREOSCOPY DETAILS
We use the standard asymmetric viewing frusta, as presented among others [4] shown in Fig. 1.

In our system following the barycenter estimation of an object or a group of objects, the distance \( C \) is estimated as the barycenter + a user-selected parameter that signifies how protruding or submerged the object/object will be perceived in relation to the zero parallax user selected parameter that signifies how protruding or submerged a group of objects, the distance \( p \) is estimated as the barycenter + a user selected parameter.

To generate an asymmetric viewing frustum the near clipping planes distances are required [3]. For the desired virtual screen a mono-frustum would be \( AOB \). For this monoscopic frustum let us denote the Field of View (FOV) angle along the y-axis as \( \theta_{\text{FOVy}} \) and the aspect ratio of the mono-frustum as \( r_{\text{aspect}} \).

We then estimate the parameters for both left and right frustums, in addition to \( D_{\text{eye}} \) as a system of simultaneous linear equations:

\[
top = D_{\text{near}} \tan \frac{\theta_{\text{FOVy}}}{2} \quad \text{and} \quad \text{bottom} = -\text{top}
\]

The left frustum \( ALB \), intersects the near clipping plane at \( d_{\text{left}} \) distance left of \( LL' \) and at \( d_{\text{right}} \) distance right of \( LL' \). Given the triangles \( ALL' \) and \( BLL' \) we find that:

\[
a = r_{\text{aspect}} C \tan \frac{\theta_{\text{FOVy}}}{2} \quad \text{and} \quad \frac{d_{\text{left}}}{b} = \frac{d_{\text{right}}}{c} = \frac{D_{\text{near}}}{C}
\]

By interchanging \( b \) and \( c \) we estimate parameters for the right frustum \( ARB \).

\[
h = \frac{D'_{\text{eye}}}{2C} \quad \text{and} \quad c = a + \frac{D_{\text{eye}}}{2C}
\]

For the left eye frustum, parameters are:

\[
left = -a + \frac{D'_{\text{eye}} + D_{\text{near}}}{2C} \quad \text{right} = a + \frac{D'_{\text{eye}} + D_{\text{near}}}{2C}
\]

For the right eye frustum, parameters are:

\[
left = -a + \frac{D'_{\text{eye}} + D_{\text{near}}}{2C} \quad \text{right} = a - \frac{D'_{\text{eye}} + D_{\text{near}}}{2C}
\]

REFERENCES