Space Shooter 2.0

Author: Nils Verheyen
Matriculation number: 3043171

Midas Touch

The modification of the game is based on the fact that the user has to look at an object for a certain time to trigger the laser. Within Unity, two settings are implemented for this purpose, which specify the length of the observation and what percentage of the duration of the gaze must be on the object. The default setting of the game includes a time of 30 frames, which corresponds to about 500 milliseconds, and an observation of 40 percent. The low observation number had to be specified due to the small objects in the game and the inaccuracy of the eye tracker. A problem with this type of input is the detection of the rest of the game field, because a too long dwell time on one position triggers the laser. To solve this problem the triggering time has to be increased, but this slows down the input. An alternative way of input is to blink or use the keyboard and/or mouse. Conscious blinking is tiring for the user in the long run, because the natural reflex has to be suppressed. The use of the mouse makes the use of the eye unnecessary to a certain extent, since it can also be used for movement. Instead of the keyboard to trigger the laser, a hardware button can also be used, e.g. integrated into a glove. By pressing two fingers against each other, a sensor can detect and transmit the action.

Feedback

A feedback was not required due to the short release time. One possibility is to colorize the selected object. However, this can lead to uncontrolled flickering, which makes the use of the application increasingly tiring for the user. In addition, the selection cannot be captured in case of color blindness. An alternative is a kind of egg timer, which is displayed on the object. This egg timer represents the current percentage of the value to be reached. Suitable is an auditory feedback in form of the egg timer, which shows the charging of the laser in a rising tone. A combination or multimodal feedback solves user limitations like poor vision or deafness.

UI Design

The speed and size of the objects did not have to be adjusted. This may become necessary if the time of required acquisition increases. The accuracy of the eye-tracker is an essential feature, as small objects can be difficult to detect in case of inaccuracies. Important for the use of the game was the implementation of a crosshair to show the exact viewing position. The design of the crosshair is of great importance if an approximate indication is sufficient or a precise position is needed. In the implementation, a small point can be seen in the crosshair, which indicates the center of the field of view and thus can be used to determine exactly whether an object was selected or not.