**Design Criteria and Target Specifications**

**Introduction:**

The main goal of this document is to define a list of technical benchmarking, create a list of prioritized design criteria which can be used when developing our final solution to the project. For this assignment it is important that we establish things like functional and nonfunctional requirements. These requirements are necessary in order to leave an impact on the participants that will leave them getting a first hand experience on why AWS need to be banned. Functional requirements are related to the main goals that the experience should provide and what the system needs to do, whereas the nonfunctional requirements are about how the system should operate. There are also many constraints that we have to follow throughout this design process.

**Functional/Non Functional/constraints:**

The first functional requirement that we need to follow is that the experience has to demonstrate at least three of the nine ethical concerns about the AWS, in order for people to gauge an understanding of why the AWS should be banned using the Robomaster S1. Design criteria would be to show things like digital dehumanization, algorithmic bias, loss of meaningful human control, etc.

Another important thing is that the people playing the game must be able to interact with it. Something for the design criteria would be that the robot has to respond to participant input, making the participants actions meaningful.

Next is, the experience must leave an impact on the participants leaving them to be feeling at-risk or endangered, rather than feeling like they “beat the system” or won the game. They need to have that feeling where no matter how well they perform in this game, there will be stuff out of their control which causes them to lose and feel negative emotions towards what will be our AWS (Robomaster S1) system. The success criterion we will use for measuring this constraint is with testing, we can use an audience and have people outside of our group test our simulation and give their responses on the human emotions that the experience highlighted for them.

Furthermore, the non-functional requirements that we must follow are that the experience must be easy for the organizers to set up. The game should fit into a carry on bag. Criteria for the design would be to make sure everything fits in a standard carry-on size.

The experience needs to avoid any ethnic, racial, or national stereotypes. Design criteria for this is to make sure the robot is programmed off actions, rather than appearance.

We need to include a trigger warning prior to participants beginning the experience. Design criteria would be to ensure every participant is warned before they begin the experience that it could potentially bring up past traumatic experiences.

Some of the constraints that we are up against are that the experience has to be 5-10 minutes. Cannot add things like additional sensors or other functions to the robot because that would make it take too long to set up, and that would also make it less portable. Can’t be based on a specific place in the world, for example you cannot base the experience in the USA, it just has to be some generic location.

**Technical benchmarking**

The robomaster can perform many tasks and has a diverse range of capabilities such as AI technology , Programmability and Interactiveness. Robomaster can perform autonomous tracking and correctly identify symbols, numbers and shapes as seen in the lab. It also has decision making capabilities on what code to run that allows for various combinations. Robomaster has lots of programmability and can be customized using python or scratch (block coding). This allows for anyone without coding to convey their message effectively. The robot has lots of interactive abilities such as playing sounds, flashing lights or following/tracking players.

**Target specifications**

Some target specifications that we must hit are the weight of the game must be under 50 pounds and fit into a stand carry on bag (55c by 40cm by 23cm). Due to the nature of where the games are going to be used (musical festivals and social events) it must be a maximum of 5 minutes and be playable in a 20 by 20 feet area. In order to get a sense for the game it will be capped at 5 people and have a minimum of 2 players. To keep within time limits a player must be eliminated at least every 45 seconds. For the game to function character cards must be recognizable to the robomaster within 2-3 meters and for the game to end there will be 0 players left. We want a minimum of 50% of players to feel affected by the game.

**4. Client Meeting:**

The client meeting changed the development of our design criteria as we now know how limited we are with extra materials that will be used in the actual game. We know that extra features cannot be very complicated to assemble as we have about 30 seconds to a minute with our Robomaster before it needs to be ready to run the game. Also we know we are limited now in extra things included in the game that are not attached to the robot as the materials must fit in a travel bag, this means that anything we include for our surroundings in our game must be effective yet small. For completing the main goal of creating a sense of emotions and loss to the users, this will be tricky as we can only have limited resources in our final product as discussed in the client meeting. The success criterion for this need can maybe be measured through testing and in simulations with other people's point of views on how our game will create an emotional connection with them. The client meeting did give us a more clear image at what we will be working with now that they have cleared up it will not be a virtual reality experience like in previous years but instead will be a real life game. This helps us as we know we need to focus now on scratch coding with the robot in order to carry out our real life game. Our success criterion for this coding portion of our project can be based on the labs that we do in this class in which it teaches us how to use scratch coding with the robomaster and we are tested on our knowledge and understanding of how we can translate our ideas of the game into the robomaster so it can carry out how we picture the game looking.

**Document conclusion:**

In conclusion, this deliverable document acts as a guide to help us come out with a final solution for this project. It goes over the functional, and nonfunctional needs, as well as the constraints that we must follow while coming up with a design. Furthermore, another important part that this document includes is the research of other similar products to the robomaster S1 as well as the technical specifications of our Robomaster S1. Knowing this information is key for us to come up with our experience so we can be sure to include all the features of the robot in order to make our experience feel as immersive as possible.