**University of Ottawa**

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**GNG 1103: Engineering Design**

**Deliverable B -Needs Identification and Problem Statement**

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Problem statement:

Politicians do not have the incentive to halt development of killer robots which are life-endangering for civilians and may force us to live in fear and out of sight. They must understand the magnitude of this crisis.

# Needs interpretation:

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| **Question** | **User Statement** | **Interpreted Need** |
| Typical Users | “The idea really is, we want to be able to show decision makers, whether they're parliamentarians or diplomats, stills, or the little 1 min video of these environments that you've created to show them the reality of what could happen if they delay making a decision on autonomous weapons if they let this happen”. | Make a short video to show what might happen if we don't act quickly. |
| “You need to be thinking, like a roboticist to figure out what sort of sensor data do you think an autonomous weapon would use to choose its targets? And then think, like a civil engineer, of what the built environment in a community, a city, a village, a town, whatever you pick, would look like. And how people would adapt that to protect themselves, based on the sensor data that the autonomous weapon is going to be pulling.” | 1. Use engineering software to simulate how civilians in virtual cities protect themselves during armed conflict.  2. Make a video to let people intuitively feel the sharp contrast between the before and after of a city due to war conflicts. |
| Likes | “ Autonomous weapons, if you can't control  What, who the target is, who do you hold accountable? Is it the programmer? Is it the engineer who built the thing? Is it the commander who authorized its use? Is it the person who turned it on, you know? But also there's concerns about sort of ethics and morality in in armed conflict like there's always the option for someone to surrender. Autonomous weapons don't necessarily allow surrender. How do you determine and program an ability to take somebody surrendering.” | Show the disconnect and lack of accountability that comes from not having a person, but an AI being what decides who dies. |
| “We really liked the creativity, and like I said, the fact that it was a different method for getting messaging across. I thought that was really interesting. And students took things in directions that we didn't anticipate.” | The experience should utilize creative, unique and unexpected ways to win the hearts of viewers. |
| Dislikes | “We don't want to, you know, show blood and gore and things, but just like, a sort of our best guess at a reality of what it would look like if we let this technology onto our battlefields and onto our streets.” | Make a powerful video that doesn’t contain graphic violence and gore. |
| “What we learned from last year with these VR experiences is that simplicity is the key. Here, keep your prototypes and your designs simple.simple, simple, simple. Don't try to tell elaborate forking stories with Npcs and and people coming in and out. Don't try to put robots roaming around and and doing all this, you're gonna have to purchase assets. It's gonna be expensive. You're gonna have to figure out how to program. All those things keep it simple.” | Make a simple, cost effective and straightforward video. |
| Suggested Improvements | “We want to balance between like fear and concern. and also hope and motivation.” | Make a video that balances between fear and concern. |
| “I think part of the reason we are looking to do this through VR, and with engineering students is because, I guess, two, two things. One, it shows the decision makers that the people that could create this technology realize it’s problematic, and so, sort of demonstrating your skills in VR, and that you know you’re, you’re all got your talents, is is helpful. It’s very different. And one of the things we’re trying to do with this is obviously the world’s got a lot of problems right now, and something unique and interesting gets people's attention. You’d think the call to stop killer robots would be interesting enough, but if we can bring in cool new technology like VR, it makes people want to stop and take part in things . . . we want to be interesting, unique, and memorable, and also demonstrate that engineering folks are not necessarily okay with their work being used in this way.” | 1. Make an video that in part captivates through its technological intricacy.  2. Demonstrate that the engineering community is not interested in having their work put towards AWS’. |
| “But you might have to think differently if we're thinking about sensor data from  for autonomous weapons could be based on heat signatures, or, you know. movement, weight, size. So, think creatively about how how people would adapt if it's their data that's being deciding who's going to be fired upon.” | 1. Figure out what sensor data the autonomous weapon will use to lock on to its target and list  them.  2. Make a feasible video showing how people should avoid being targeted by autonomous weapons, or what behaviors they should use when they are likely to be targeted to avoid being harmed. |
| Setting (Time, Place, etc) | “Present near future recognizable. And also, as I mentioned, you know, you guys have a bunch of classes? You don't need to invent a different type of city” | The video should simulate the current or upcoming years in terms of the general appearance of cities with modern architecture. |
| “Go nuts but stay away from crude stereotypes of any particular region” | Any environment/ group of people can be depicted in the video, but ignorant portrayals and racial/ethnic generalizations must be avoided. |
| “Yeah, what would it look like in Ottawa to have you know Ottawa, the built environment in Ottawa, transformed because, you know, foreign killer robots were patrolling the streets and skies.” | It would benefit the experience if it had familiarity for the viewers. The goal is to introduce a familiar world with added elements of survival among killer robots. |
| Fears | “For us. I think it's one of the few times we have the potential to stop things before they become a humanitarian crisis. So that does give us a bit of a ticking clock. We work on all the lot of the other issues as well. But this is the one where we could be preemptive rather than trying to to play, catch up. And after we've already seen humanitarian harm.” | The video should be credible/believable enough to make the viewer want to stop the designing of these robots today, rather than making them want to test them in real life first. |
| “So right now we have robots that can target and, like, you know, feed a bunch of potential targets back to people who are looking at the targets and making decisions about when to pull the trigger. The difference here is that these robots would pull the trigger without asking the question, Is this a target for me?” | The video should show how much more dangerous/problematic it is for robots to kill carelessly. |

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| **Number** | **Needs** | **Importance** |
| 1 | Make a short video to show what might happen if we don't act quickly | 1 |
| Use engineering software to simulate how civilians in virtual cities protect themselves during armed conflict. | 2 |
| Make a video to let people intuitively feel the sharp contrast between the before and after of a city due to war conflicts. | 2 |
| 2 | Show the disconnect and lack of accountability that comes from not having a person, but an AI being what decides who dies | 1 |
| The experience should utilize creative, unique and unexpected ways to win the hearts of viewers. | 1 |
| Make a powerful video that doesn’t contain graphic violence and gore. | 3 |
| 3 | Make a simple, cost effective and straightforward video. | 1 |
| Make a video that balances between fear and concern. | 2 |
| Make a video that in part captivates through its technological intricacy. | 2 |
| Demonstrate that the engineering community is not interested in having their work put towards AWS’. | 3 |
| 4 | Figure out what sensor data the autonomous weapon will use to lock on to its target and list them. | 3 |
| Make a feasible video showing how people should avoid being targeted by autonomous weapons, or what behaviors they should use when they are likely to be targeted to avoid being harmed. | 4 |
| The video should simulate the current or upcoming years in terms of the general appearance of cities with modern architecture. | 5 |
| Any environment/ group of people can be depicted in the video, but ignorant portrayals and racial, ethnic, etc generalizations must be avoided. | 4 |
| 5 | It would benefit the experience if it had familiarity for the viewers. The goal is to introduce a familiar world with added elements of survival among killer robots. | 1 |
| The video should be credible/believable enough to make the viewer want to stop the designing of these robots today, rather than making them want to test them in real life first. | 1 |
| The video should show how much more dangerous/problematic it is for robots to kill carelessly. | 2 |