Stop Killer Robots

Group 13

Carter Yue, Sam Meyer, Ryan Athauda and John (JP) Riccio

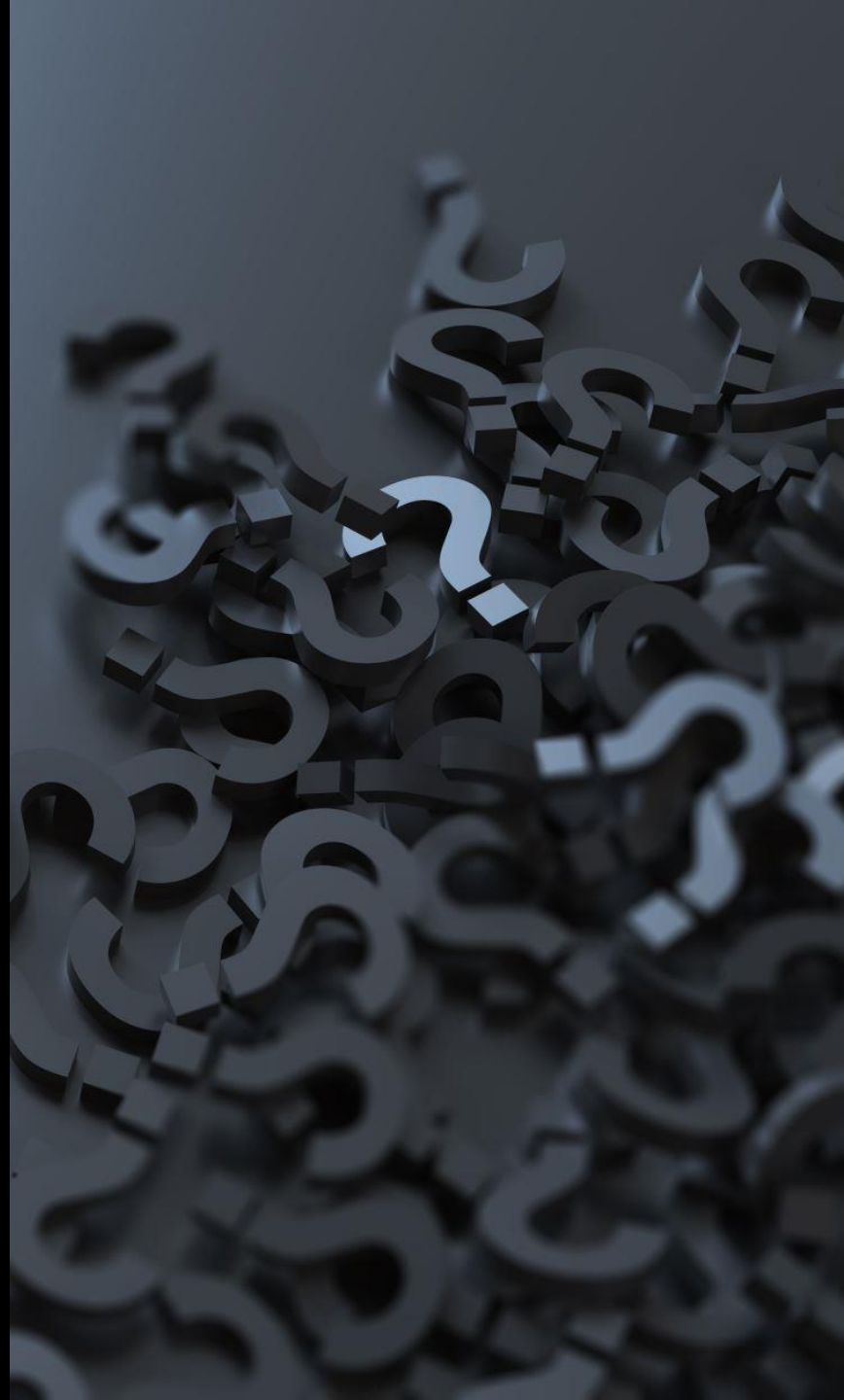
The Client – Mines Action Canada

- Canada's leading humanitarian disarmament organization
- They are committed to making global changes
- Treaty on the Prohibition of Nuclear Weapons, Convention on Cluster Munitions, Anti-Personnel Mine Ban Convention

MINES ACTION CANADA

Needs Identification

- Short and simple video
- No gore
- Foreign but recognizable landscape
- Show what a logistical vs a rational decision looks like



Problem statement

- Our client wants a short and simple video, that is suitable for all ages and can convince UN representatives that Autonomous weapons present adverse effects.

Design Criteria

Non-Functional Requirements

Design Specifications	Relation (<,>,=)	Value	Units	Verification method	Associated Needs
Easy to understand	=	Yes	N/A	Testing, analysis	-Want simplicity to create ease while developing, but also so decision makers understand. -
Conveying Anti-Ai controlled weaponry	=	Yes	N/A	Testing, analysis	- Show the daily lives of "civilians" if robots are released. -Environmental Impact
Use of familiar locations	=	Yes	N/A	Analysis	-The experience should not be super futuristic but in a near future, recognizable environment. It should also appear destructive and war-like.
Provoking an idea of pro-activity	=	Yes	N/A	Testing, Estimation	-Shows that robots helping us is ok.
Video is suitable for public display	>	Yes	N/A	Testing, Analysis	-No blood or violence. Mainly focus on the aftermath of robots being deployed, showing the impact of these on the world.

Functional Requirements

Design Specifications	Relation (<,>,=)	Value	Units	Verification method
Using a virtual world to simulate real world events	=	Yes	N/A	Testing
Ensuring the video works on most systems	=	Yes	N/A	Testing
Soundsystem	<	10<	$	Estimate, Analysis

Constraints

Design Criteria	Relation (<,>,=)	Value	Units	Verification method
Length of the video	>	30 to 60	seconds	Analysis, Estimation
Cost	=	50 <	Dollars (cad)	Estimation, Analysis
Total Production Time	>	2	months	Estimate
Resolution	=	=>480	Pixels (p)	Testing, Analysis

Concept

A modern urban area that was recognizable and easy to make

An A.I. controlled tank

A.I. can easily be fooled with a picture that looks even a little off

Defining our autonomous weapon

- Weapons that can harm without the need for human control
- Includes ai-guided missiles, drones and humanoid robots

Storyline (subsystem #1)

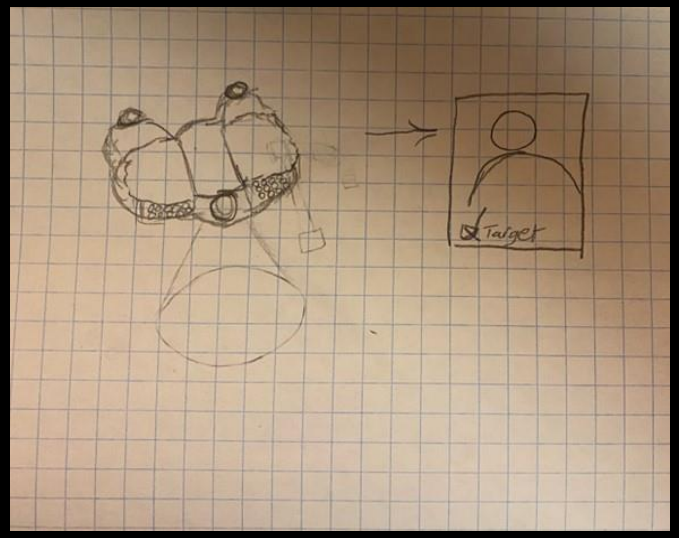
Camera follows a first-person view of an A.I. controlled tank patrolling a town

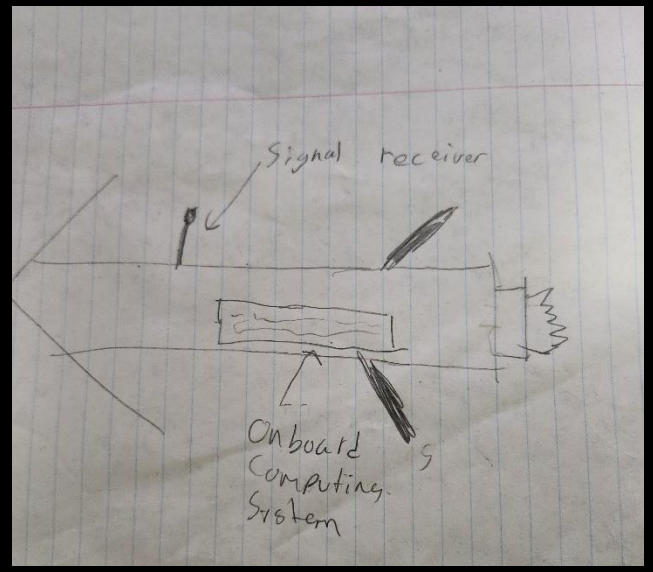
Tank will encounter a poster with a solider on it, think it’s a real solider and open fire

Will the encounter bird in an unfamiliar position and open fire

Soldiers will be going through the neighborhood in reflective gear to hide from tank

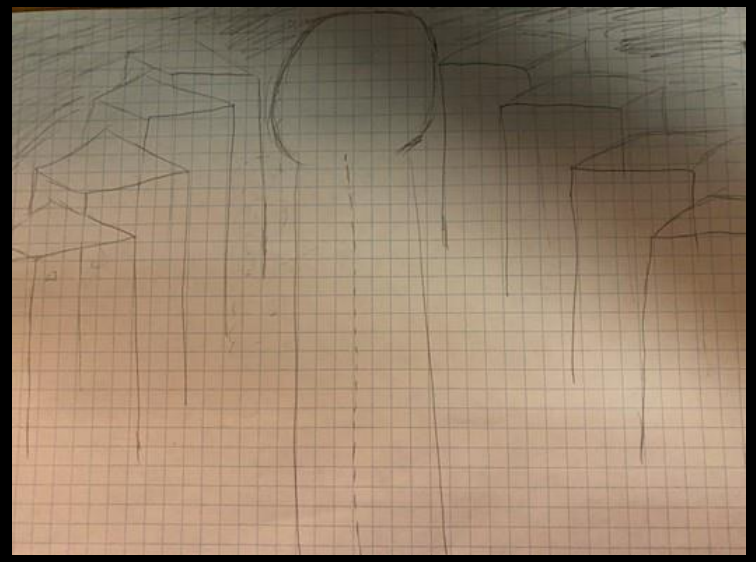
Autonomous Weapon (subsystem #2)

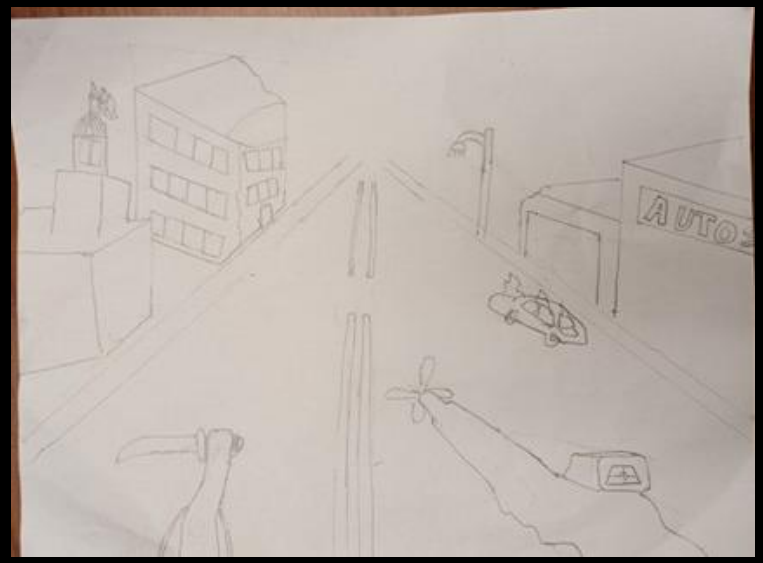


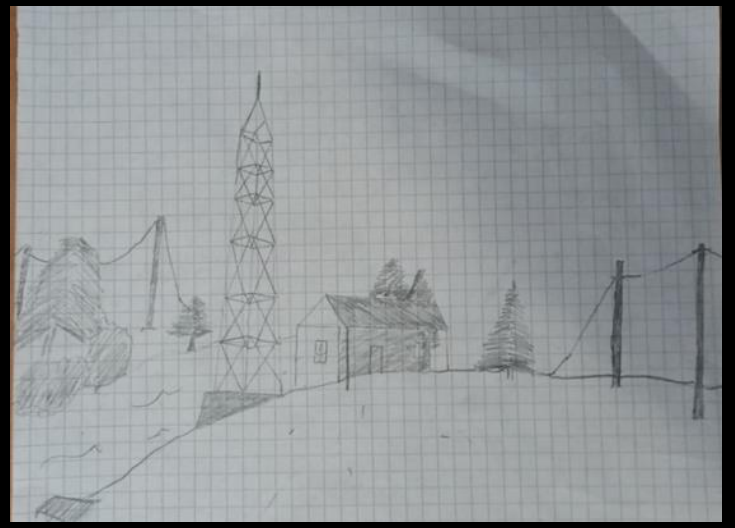


- Drone
- Rocket
- Autonomous vehicle/tank

Setting/Camera POV(subsystem #3)

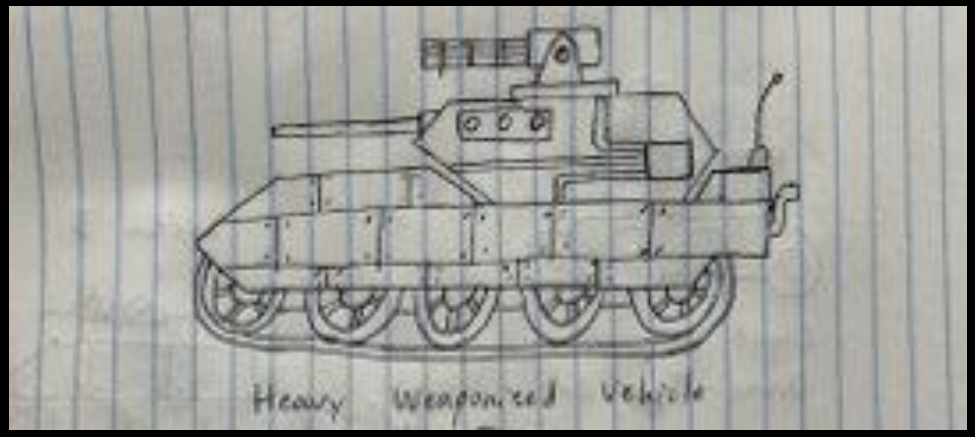


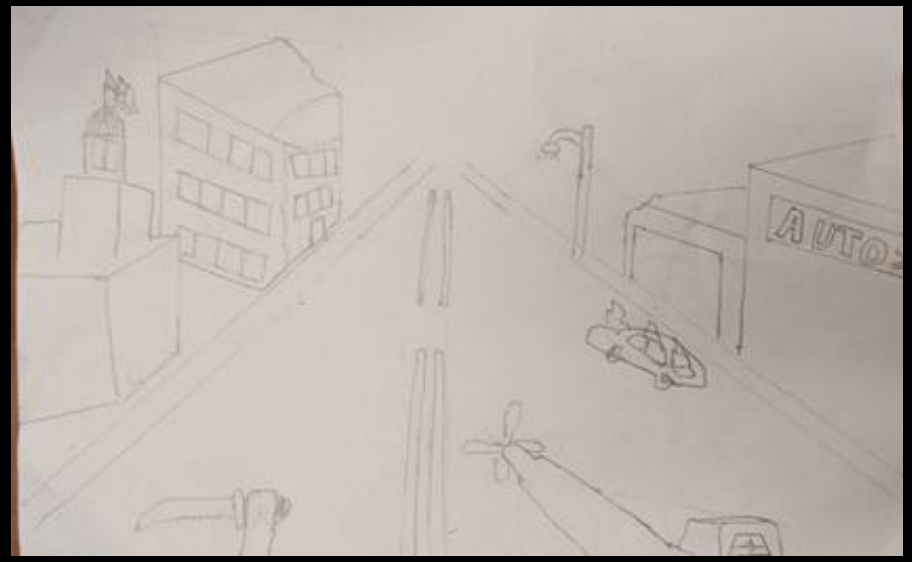




- Autonomous weapon POV
- Civilian POV
- Third Person POV

Initial concept(based on ideate stage)





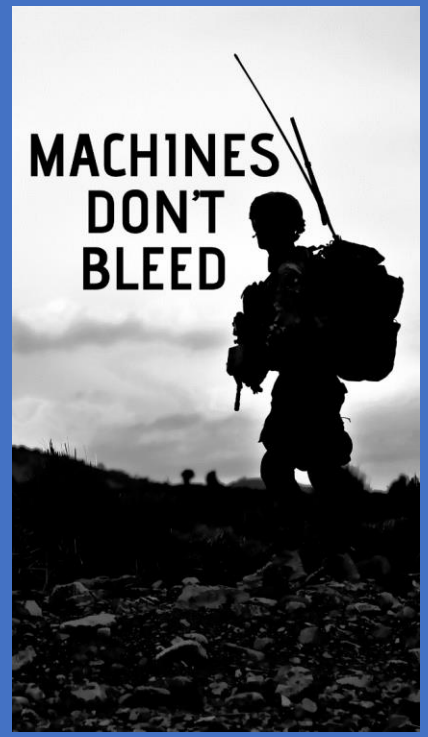
- Tank POV
- Urban setting
- Tank mistakenly fires

Benchmarking

Examples of simulations/scenarios	Robot Killers(lucas)	Mech robot simulation	Autonomous
Footage used	game	Game footage	Re-enactment
Easy to understand	medium	medium	very
Camera movement	One frame	One frame	360
Camera perspective	First person POV	First person POV	Wide view, closeups
interact ability	Gaming (controllable movement)	Uncontrollable movement	Uncontrollable movement
Total	13	9	11

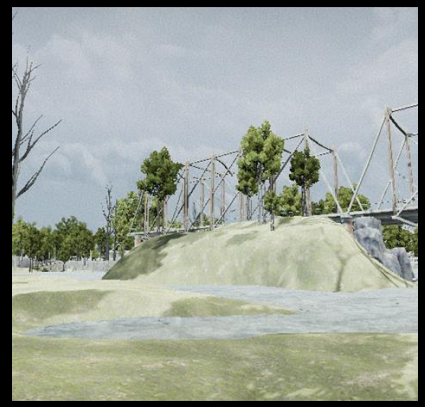
Green-good-3, yellow-medium-2, red-bad-1

Poster Ideas



Prototype 1



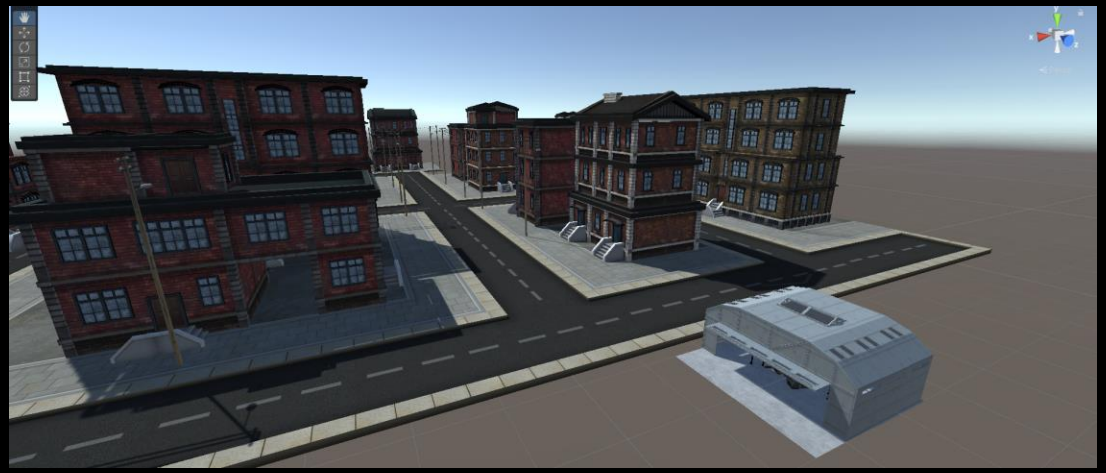
TESTING OUT SCENERY

WORKING ON CONTROLLER CONFIGURATION BEFORE WE WERE GIVEN A PACKAGE WITH ALL NECESSARY SCRIPTS

LEARNING HOW COLLISIONS WITH OBJECTS WORKS

Prototype 2

- TESTING OUR PAID ASSETS, AND DECIDING WHICH ONES TO KEEP
- ENSURING THE STEAMVR PLUGIN WORKS WITH OUR MODELS
- ALL ANIMATIONS WE USE LOOK NICE AND WORK
- CHECKING IF CAMERA FILTERS WORK
- SEEING IF STORYLINE WORKS



Prototype 3

FINALIZING ASSETS AND STORY-LINE

COMPLETE AND TEST AUDIO, WITH POTENTIAL VOICE-OVER

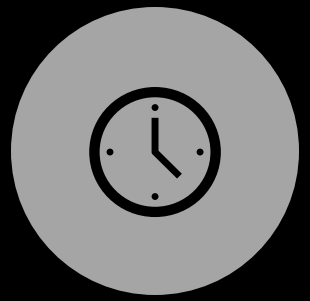
FINALIZE BUILDING DESTRUCTION MECHANICS

BOM (Subject to change)
1

Item Name + description	Quantity	Cost (CAD + Tax)
Flooded Grounds (prototype 1 environment)	1	$0
Tank 3D Model (prototype 1 model)	1	$0
Living Birds Pack	1	$0
Free HDR Sky	1	$0
Sci-fi tank (final model used)	1	$11.68
Modular City Kit (final environment)	1	$7.19

Next Steps and lessons learned

Time and task management could be better



More efficient usage of time

Ask if there are going to be provided ways of controlling the main model

Spend more time learning how Unity works, and how animations work

Questions?

Bibliography

- *Danger ahead: Robotics in war are ethically flawed - analytics insight*. Uran-9. (n.d.). https://www.analyticsinsight.net/danger-ahead-robotics-in-war-are-ethically-flawed/
- Editor, R. D. C., & Manager, R. B. C. B. C. (2022, September 20). *HCaptcha vs. recaptcha: Which is right for your form?*. WPForms. https://wpforms.com/hcaptcha-vs-recaptcha-which-is-right-for-your-forms/
- Knight, W. (2021, April 28). *Military artificial intelligence can be easily and dangerously fooled*. MIT Technology Review. https://www.technologyreview.com/2019/10/21/132277/military-artificial-intelligence-can-be-easily-and-dangerously-fooled/
- *United Nations*. Logos Download. (2016, July 19). https://logos-download.com/8310-united-nations-logo-download.html
- Wikimedia Foundation. (2023a, July 12). *Convention on Cluster Munitions*. Wikipedia. https://en.wikipedia.org/wiki/Convention_on_Cluster_Munitions#:~:text=Signatories%20included%2021%20of%20the,munitions%2C%20including%20Laos%20and%20Lebanon.

2023. Shutterstock. 2023. https://www.shutterstock.com/search/tank-ww2?c3apidt=71700000077474028&cr=bc&gclid=253fa5374da01f6fa837c068c1182fe7&gclsrc=3p.ds&kw=%2Fsearch%2F&msclkid=253fa5374da01f6fa837c068c1182fe7&pl=PPC_BNG_CA_DSA-&utm_campaign=CO%3DCA_LG%3DEN_BU%3DIMG_AD%3DDSA_TS%3Drtconv_RG%3DAMER_AB%3DACQ_CH%3DSEM_OG%3DCONV_PB%3DMicrosoft-Ads&utm_content=FF%3DDSA-Search_AU%3DSite+Visitors&utm_medium=cpc&utm_source=bing&utm_term=%2Fsearch%2F.

Bibliography part 2

- Wikimedia Foundation. (2023b, September 27). *List of parties to the Treaty on the prohibition of nuclear weapons*. Wikipedia. https://en.wikipedia.org/wiki/List_of_parties_to_the_Treaty_on_the_Prohibition_of_Nuclear_Weapons
- Wikimedia Foundation. (2023c, November 12). *List of parties to the Ottawa Treaty*. Wikipedia. https://en.wikipedia.org/wiki/List_of_parties_to_the_Ottawa_Treaty
- Wikimedia Foundation. (2023d, November 13). *General atomics MQ-9 reaper*. Wikipedia. https://en.wikipedia.org/wiki/General_Atomics_MQ-9_Reaper