Lethal Autonomous Weapon System

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Presentation Outline

01 **Problems**
Background of LAWS and how LAWS affects us

02 **Prototype**
Prototype methodology

03 **Proposed solution**
Our proposed solution to the problem on LAWS

04 **Prototype demonstration**
How our prototype works

Background

- Civilians threatened
- LAWS’ algorithm make critical decisions
- Restrict human rights, freedom
- Stand of Organizations (ICRC)

Problem Statement

What

LAWS negatively impact civilians and their stakeholders

Why

Life or death decisions are made by algorithms

How

Cause unwanted harm, raising unethical issues

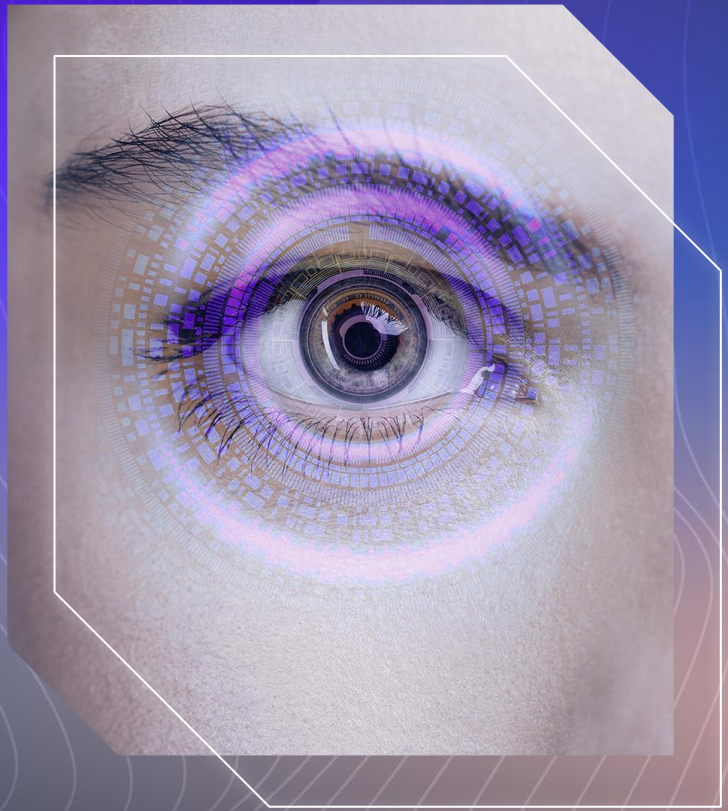
Breach of Ethics

ACM 1.2	Civilians injured, killed or harmed in any ways during the use of LAWS.
ACM 1.6	Data of individuals is collected and stored without consent.
ACM 2.9	Data leak can cause sensitive information to be accessed by the public.

Methodology

In the creation of the prototype

A prototype simulates the product



A Prototype Provides

- Clarity
- Validation
- Acceptance
- Improvement

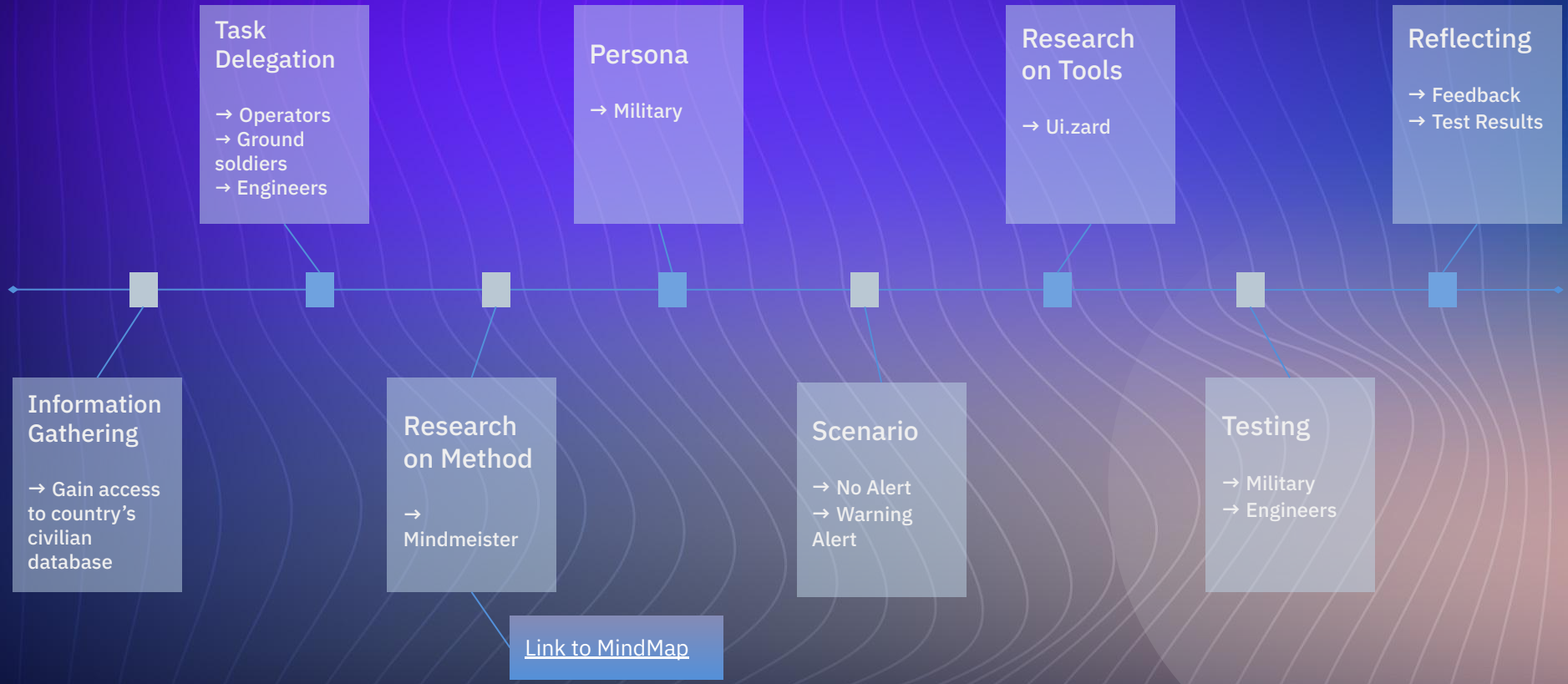
High Fidelity

Computer-based and allow realistic user interactions

Low Fidelity

Usually paper type and do not allow user interaction

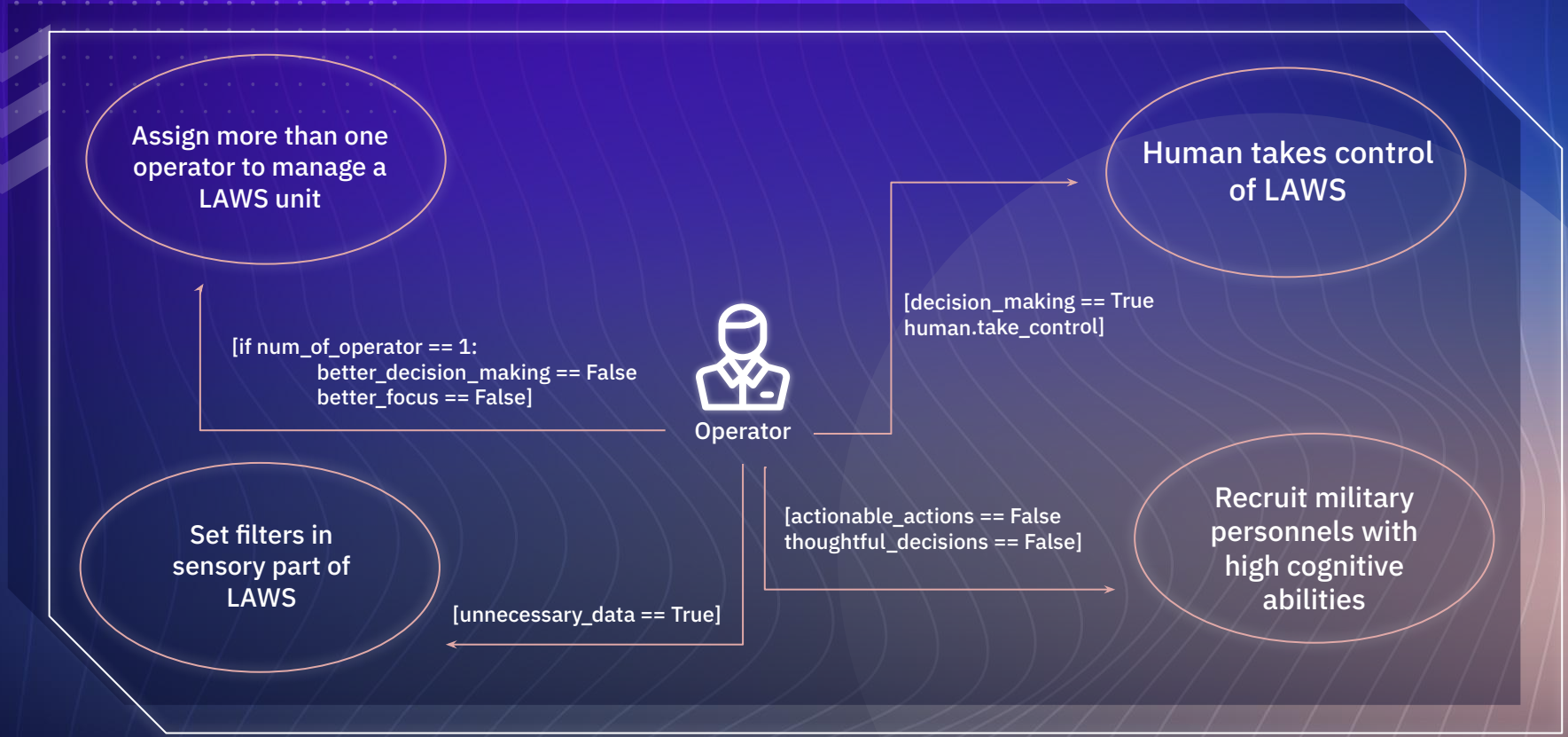
Prototyping Development Stage



Solution

Implement human control on LAWS

High Level Design



Prototype Implementation Workflow

To ensure civilians and many other people alike that LAWS will strictly comply to policies and laws regarding LAWS	Manual Override	Human Control	Testing	Find bugs /problems /can improved → assign a team
	‘Kill’ switch control both locally and manually		Ensure (error-free, requirements completed, good user experience)	Change is large enough → back to first phase and begin anew

Output Integrated

Output	Integration
Flow Chart	Flow chart demonstrates how the prototype works if implemented within military. This gives the users a clear and prior understanding on how LAWS will work with the prototype which will be seen in the UI Design.
UI Design	UI Design is used as part of our initial product visualisation to test how our idea will be presented to the users. This provides a preliminary outlook on how the UI will look like and to allow the users to provide feedback.
Persona	Persona is used to create 2 scenarios where the importance of human control is highlighted.

Delegation of Roles

Andrew Huan Zhen Xiang	Ethan Yong Yu Heng	Foo Kai Yan	Tan Yi Jin	Tang Wei Yao	How Yew Wai
→ Persona → Testing	→ Persona → Testing	→ Design UI of Prototype → Design Flow of Features → Scenario → Testing	→ Research → Testing	→ Persona → Testing	→ Research → Testing

Prototype Flow

Prototype Demonstration

How the prototype will be used

Link to UI design

Product Overview

How does our prototype supports our solution?

Train or recruit military personnels that have high cognitive abilities

Filters to filter data collected from sensory part of LAWS units

Allow more than 1 operator managing per LAWS unit

Persona | Scenario

Military Operators

- Responsible for operating a single LAWS unit
- LAWS unit in use → Killer Drone

Name : Jeno L.
Age : 27
Clearance Level : 4
Partner : Jeez M.
Years of experience : 5
War experience : Yes
Spouse : None

Name : Jeez M.
Age : 30
Clearance Level : 4
Partner : Jeno L.
Years of experience : 8
War experience : Yes
Spouse : Clarissa M.

1. Targets did not fell into the direct scanning zone of the Killer Drone
2. Targets fell into the direct scanning zone of the Killer Drone

Scenarios

No Alert

Scenario 1

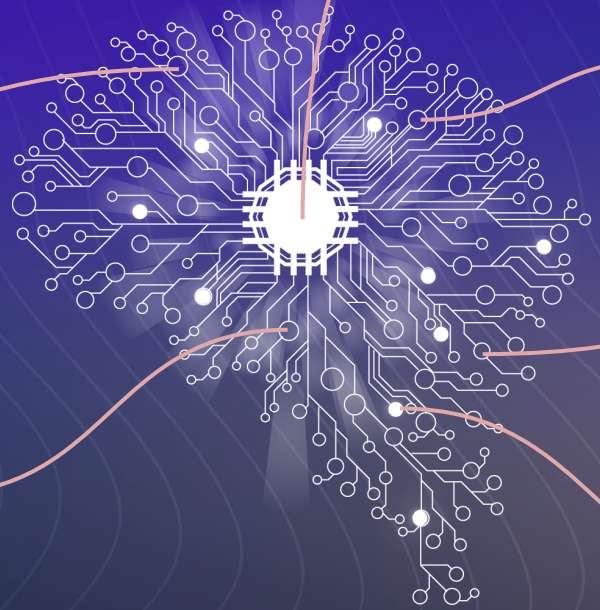
No decisions that require human control or input during mission

Warning Alert

Scenario 2

Decisions that require human control or input during mission

In summary...



Implement human control

Private access to database

Obtaining feedback

Decision Making

High risk of impacting stakeholders

Limited to some operations as well as access to database

Thank you!

Do you have any questions?

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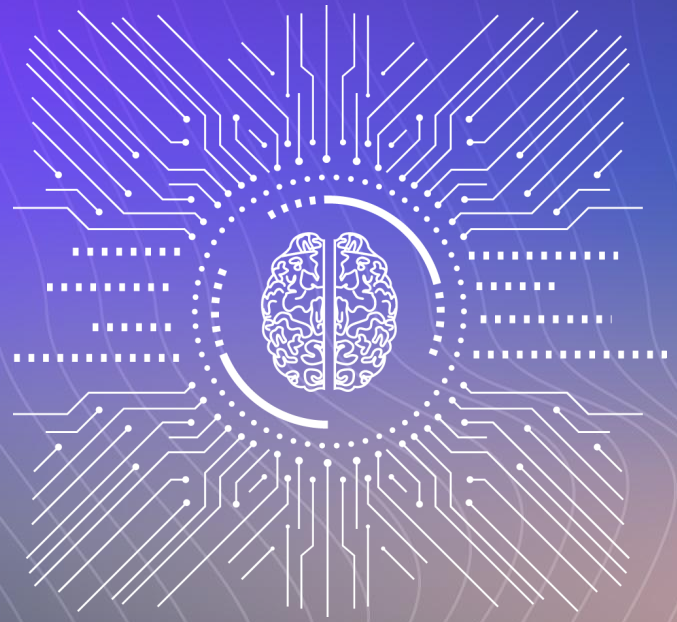

References

"2022 Israel Military Strength". (2022). Global Firepower - World Military Strength. Retrieved from Global Firepower: https://www.globalfirepower.com/country-military-strength-detail.php?country_id=israel

Asaro, P. (2020). Oxford Academic. 7 autonomous weapons and the ethics of artificial intelligence. Retrieved from Oxford Academic: https://academic.oup.com/book/33540/chapter-abstract/287905547?redirectedFrom=fulltext

Association for Computing Machinery. (2018). ACM Code of Ethics and Professional Conduct. Retrieved from Association for Computing Machinery: https://www.acm.org/code-of-ethics

Brian Stauffer. (n.d.). Stopping killer robots. In Human Rights Watch. Retrieved from Human Right Watch: https://www.hrw.org/report/2020/08/10/stopping-killer-robots/country-positions-banning-fully-autonomous-weapons-and

References

Boisboissel, G. d. (2015). IEEE. Brno, Czech Republic. Retrieved from IEEE Xplore:

https://ieeexplore.ieee.org/document/7153656

Boulanin, V., Davison, N., Goussac, N., & Carlsson, M. P. (2020). SIPRI. Limits On Autonomy In

Weapon Systems. Retrieved from SIPRI:

https://www.sipri.org/sites/default/files/2020-06/2006_limits_of_autonomy_0.pdf

Cherry, J., & Johnson, D. (2022). Maintaining Command and Control (C2) of Lethal

Autonomous Weapon Systems: Legal and Policy Considerations. Retrieved on October 7, 2022 from:

https://www.swlaw.edu/sites/default/files/2021-03/1.%20Cherry%20%5Bp.1-27%5D.pdf

Dahlmann, A., & Dickow, M. (2019). Preventive Regulation of Autonomous Weapon Systems.

SWP Research Papers 3/2019, Stiftung Wissenschaft und Politik (SWP), 3(1). doi: 10.18449/2019RP03

de Ágreda, Á. G. (2020). Ethics of Autonomous Weapons Systems and its Applicability to Any Ai Systems. Telecommunications Policy 44, 1019533. Retrieved from ScienceDirect:

https://www.sciencedirect.com/science/article/pii/S0308596120300458

References

Docherty, B. (2015). Human Rights Watch. The Lack of Accountability for Killer Robots.

Retrieved from Human Rights Watch:

https://www.hrw.org/report/2015/04/09/mind-gap/lack-accountability-killer-robots

“Ethical Theories”. (n.d.). The Arthur W. Page Center. Retrieved October 7, 2022 from

https://pagecentertraining.psu.edu/public-relations-ethics/introduction-to-public-relations-ethics/lesson-1/ethical-theories/

Etzioni, A., & Etzioni, A. (2017). Army University Press. Pros and cons of autonomous

weapons systems. Retrieved from Army University Press:

https://www.armyupress.army.mil/Journals/Military-Review/English-Edition-Archives/May-June-2017/Pros-and-Cons-of-Autonomous-Weapons-Systems/m

“Global Survey Highlights Continued Opposition to Fully Autonomous Weapons”. (2021).

Retrieved from Ipsos:

https://www.ipsos.com/en-us/global-survey-highlights-continued-opposition-fully-autonomous-weapons

References

"History of Jerusalem". (2022). Retrieved October 7, 2022 from

https://en.wikipedia.org/wiki/History_of_Jerusale

International Committee of the Red Cross (ICRC) position on autonomous weapon systems:

ICRC position and background paper. (2021, December 12). Retrieved from International Review of the Red Cross, 102(915), 1335–1349:

https://doi.org/10.1017/s1816383121000564

Jones, T. (2021, December 1). 10 Reasons Why Autonomous Weapons Must be Stopped.

Retrieved from Future of Life Institute

https://futureoflife.org/2021/11/27/10-reasons-why-autonomous-weapons-must-be-stopped/

Killer Robots: Negotiate New Law to Protect Humanity. (2021, December 1).

Retrieved from Human Rights Watch:

https://www.hrw.org/news/2021/12/01/killer-robots-negotiate-new-law-prot ect-humanity

References

Kwik, J. (2022). MDPI Open Access Journals. A Practicable Operationalisation of Meaningful Human Control. Laws, 11(3), 43. Retrieved from MDPI Open Access Journals: https://doi.org/10.3390/laws11030043

"Lethal AWS". (2022). Lethal AWS. Retrieved from Lethal AWS on October 7, 2022: https://autonomousweapons.org/solutions/

Marvin. (2019). Friedman Trial Lawyers. Can you sue a company for a defective product injury? Retrieved from Friedman Trial Lawyers. https://www.friedmantriallawyers.com/blog/can-you-sue-a-company-for-a-defective-product-injury/

Nailah. (2022). Moodle Monash. FIT1055 IT PROFESSIONAL PRACTICE & ETHICS. Retrieved from Moodle Monash: https://d3cgwrxphz0fqu.cloudfront.net/c4/5d/c45d0ebf4f1411d12390ae8c670f830e1265f93e?response-content-disposition=inline%3Bfilename%3D%22FIT1055%20IT%20professional%20practice%20and%20ethics%20textbook%20v2.pdf%22&response-content-type=application%2Fpdf&Expires=1665242940&Signature=icizV1ypk4Icup~cEiwvtX4DrPaf0HaRYYTPWc7Gir1xtOMCHo4LsvtiS7pPSsxaNpcDqYT3mMrdNsJenOU3JIkpLQRhgrQgVqBbJt0ILDQA9FQAi3D5aPYS9QAgqg3Z255VPBYwJth77ubZXkVlZezIHO6p4ChQE~-mEG57qeX~8uLh-Bn0a61WupyP~3lrGfAhRRGVFBmhKLKDBIC1PjXiqAFnNHfwX6TnsT~LlK5Elo5y1u2TB3QAip1DnqgLGp6jUodUMYy1MU2pLGO-AdbHuiOfeU2IjPHKwaE8Q6Y-CUFh839fn3JVhT3AgHNYfC37n7C7YKMJAd3ywryi0w__&Key-Pair-Id=APKAIRIEZFHR4FGETIHA

References

Scripione, J. (2021). ResearchGate. The Lethal Autonomous Weapons Systems: A concrete example of AI's presence in the military environment. Retrieved from ResearchGate: https://www.researchgate.net/publication/351100004_The_Lethal_Autonomous_Weapons_Systems_A_concrete_example_of_AI's_presence_in_the_military_environment

Simon, S. (2019). Malmo University. Conceptualizing lethal autonomous weapon systems and their impact on the conduct of war. Retrieved from Malmo University: https://www.diva-portal.org/smash/get/diva2:1483872/FULLTEXT01.pdf

Trager, R. F., & Luca, L. M. (2022). Foreign Policy. Killer Robots Are Here—and We Need to Regulate Them. Retrieved from Foreign Policy: https://foreignpolicy.com/2022/05/11/killer-robots-lethal-autonomous-weapons-systems-ukraine-libya-regulation/

Kleinman, Z. (2020). BBC News. Mohsen Fakhizadeh: "Machine-gun with AI" used to kill iran scientist. Retrieved from BBC news: https://www.bbc.com/news/world-middle-east-55214359