




HONOUR'S PLEDGE FORM

In our honour We, as listed & signed below, as students from the **Fakulti Teknologi Maklumat & Komunikasi (FTMK), Universiti Teknikal Malaysia Melaka (UTeM)**, have neither knowingly given nor received any inappropriate assistance in academic work on this assignment, except within our group/team members, for the course **BITI 3523 AI in Robotics & Automation**. We have also not plagiarized or be complicit with those who do.

We pledge that throughout the duration of receiving this independent learning assessment task till submission, We have been honest and observed no dishonesty.

Group Project (15%): Robotics in Movies

***CLO3:** Organize solution steps in solving robotics using Artificial Intelligence concepts. (A4, PLO6, LOD C3C)*

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1) Understanding & analysis of robot(s) behaviors and capabilities

Movie: Ejen Ali The Movie (2019)

The film follows a 12-year old spy Agent, Ali, as he embraces his role in MATA, the secret agency, and uncover the secret technology which has threatened the fate of Cyberaya. But unknown to Ali, MATA has also created a new improved version of IRIS, the IRIS NEO, to use the Override at will. The robots in the movie is known as Buster Droids which are white in colour with blue neon lights as their visionary. They appear when there is a security breach or attack mode. Besides that, whenever the IRIS NEO is activated in this movie, Buster Droids follow the commands.

Buster Droids robots in this movie are state of the art technology and it is developed with high levels of artificial intelligence as it knows how to identify and attack an intruder when they breach into the company. The Buster Droid has complex behaviours producing alerts, detecting intruders and attacking them if they trespass. The Buster Droids robots has a combat robot behaviour where it has been custom-built to fight using various methods to incapacitate each other. The robots have generally been remote-controlled meaning to say it is a teleoperated behaviour robot.

The robot in this movie has capabilities of being an effective combat robot behaviour where it is aware of the method of damaging or controlling the actions of its opponent while at the same time protecting itself from aggression. Some screenshots were shown to support this part in the screenshot section below. The robot has been equipped with a variety of weapons and abilities, such as firing and powerful punches.

When the IRIS NEO is activated the robot follows commands of the human which is related to the concept of imitation learning, a technique allowing machines to learn from observing and mimicking the actions of humans. When it is not in IRIS NEO mode the robots make decisions and act on their own to attack or defend the enemy attacks where they are equipped with sensors and cameras, allowing them to see and analyse their opponents.

2) Robotics design, e.g., using Finite State Automata (FSA)

In Ejen Ali The Movie (2019), the robots are using teleoperatic system referring to the remote control of a robot. In the teleoperatic system, the robot's motion is controlled by the human operator from at a distance. This can be seen clearly in the movie Ejen Ali The Movie where the robots are controlled by the villain to destroy the city. The robots that are being controlled their movements then walked around the city with the guidance of the villain. The villain can control these robots at a distance and inaccessible environment to perform high-level control behaviour. Hence, this scene can be interpreted as the representation of teleoperated devices which are being remoted by a human controller.

In the same scene, the robot's hierarchical behaviour in manipulating tasks can be seen. This behaviour is highly complex instance to the robot's action and the various layers of decision-making. The robots in the Ejen Ali The Movie shown the levels of complexity in controls and decision-making. For example, the low level of control exhibits when the robots are able to walk to one place to another. Next, the robots show a mid-level control as it gathers the information of its opponets whether its on the land or flying in the air. This leads to a high-level control which is the villain's ability in controlling the robot's movement and actions. With the advances in sensing (computer vision), the robots are able to detect the opponets land or air and proceed to attack them. Furthermore, these robots also has he defend mechanism when encountering dangers from the surrounding. Thus, this hierarchically organized behaviour enables the robots not only simple task but complex task such as attacking and defening.

3) Potential ethical dilemmas/concerns

In chapter ethics, we have learned that every robot has an ethical impact. We have questioned ourselves is it ethically right to create robots and treat them like slaves? In Ejen Ali The Movie, the robot is obviously built in order to protect those that have been programmed into them. In this context, the robot is created solely for purpose of eliminating the enemies and keeping their creator or people that they have been assigned to protect safe from harm. We can also see in the movie where when Ali was controlling the robot, he made the robot destroy itself in order to open the locked gate. Since robots cannot act or communicate with emotions like us humans do, they just simply follow their program. We can say that it is unethical to do so because the robots are used and destroyed at will. So how to overcome this concern? This can be done by the creator of the robot itself. They should not create a huge robot that is equipped with rifle full of ammo and bombs all over the robot and make them as basically a soldier. When they are programmed and trained as soldier, they are treated and used like a slave since robots can always be replaced whenever they were destroyed.

Another ethical concern we have found is related with Asimov's first law. The first law stated that "a robot may injure or human being or, through inaction, allow a human being to come to harm". It is important to note that Ejen Ali The Movie is a movie set in the future where robots are used a lot in defence force of for war. The robot in this movie are programmed to eliminate the enemies and protect the creator or the master. Since the robots are programmed for battle, it cannot run away from its purpose so in the end there will always be innocent people who will be harmed accidentally. So how to overcome this concern is, by making sure the robot will not deploy if its system does not meet the legal safety standards and highest professional ethics. The robot may still be used in defence force but the creator needs to make sure that the robot will keep the innocent people safe from harm.

Apart from the stated concerns above, we think that Asimov's third law has context in this movie. The third law defined that "a robot must protect its own existence as long as such protection does not conflict with the first or second law". As long as the robot does not injure or harm any human and also obeying the human's order, the robot should protect its own existence and keep functioning. But this concerns a lot of people because when the robots can keep on functioning on their own and can protect humans and itself, it feels like there is no longer a need for human forces such as the police, the military, the fire and rescue force and

many more. This concern will potentially make humans lose jobs since robots can do all of the stated above, humans will feel insecure that the robot may replace the humans existence.

4) Several related figures (e.g., flowchart, screenshots, etc.)

Website to watch Ejen Ali The Movie: <https://www.bilibili.tv/ms/video/2044254112>

- Screenshots from movie

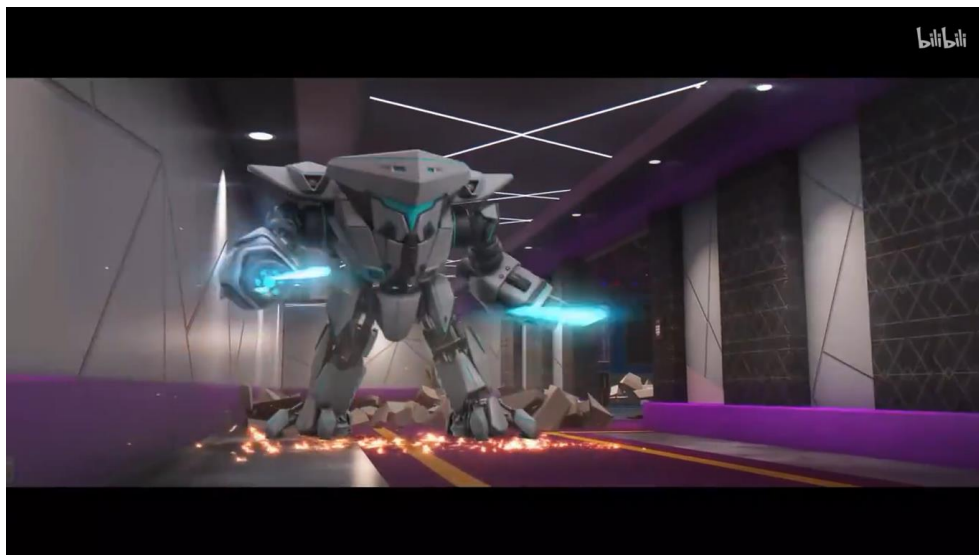


Figure 1: Scene from the movie when Ali breaches M.A.T.A and the robot attacks them.

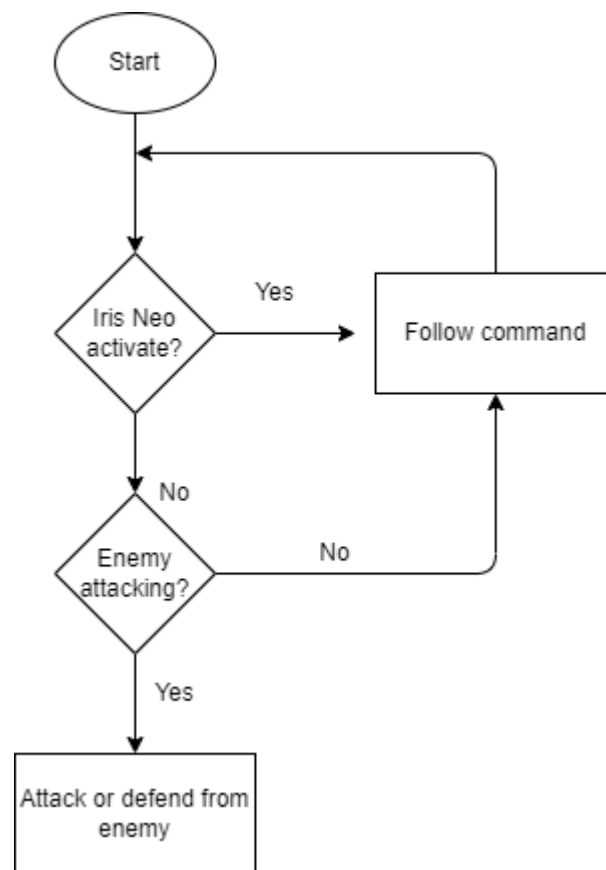


Figure 2: Ali's I.R.I.S' Override mode makes him have control over the robot.



Figure 3: During the speech of Dato' at the inauguration, Niki takes hostage with the two robots following her commands.

- **Flowchart of the robot behaviour**



GROUP PROJECT EJEN ALI

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