

Project Title:	<u>Fighting Robots</u>	Project ID:	<u>001</u>
Sponsoring Organization:	<u>Smart Methods company</u>	Sponsor Representative:	<u>Eng. Wessam Munshi</u>
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1. Project idea

The fighting robot project is about making 2 robots and programming them so that a fight can be done between them. The two robots start fight so that a sharp tool such as a "knife" is placed in the hand of the robot which we can call it "End effector", and each robot is holding a balloon. The robots can move remotely using a control panel on mobile devices.

2. Project plan

Project manager/industrial engineer can prepare project plan in the form of project life cycle, and determine the project processes from when it was an initial idea to a finished product.

1. Conceptualization phase: in this phase, the idea of the project (fighting robots) was presented in an accurate and detailed manner, after which it was approved.

2. Planning phase: the project is planned. Tracks members must work according to their required tasks, for instance, the Mechanical engineering members have to draw the parts of the robot (the robotic arm with its components, the box, the base and the wheels) Using 3D drawing software, the Electronic engineering members have to design electrical circuits and dealing with motors, the AI&robot members have to deal with the ROS and programming the robot to become intelligent, and the IOT members have to programming the robot's control interfaces and web pages.

3. Design/development/engineering/manufacturing phase: The tasks required from each track are being worked on, such as manufacturing robotic parts and motors,

programming control interfaces, etc., according to the required and pre-determined standards and quality.

4. Implementation/Testing/Production phase: in this phase, the robot is launched and tested.

5. Closing/launch phase: If the stakeholders approve the product and are satisfied with its performance, the product is released to the consumer or user to try it, and the lessons learned from this step are obtained.

6. Post-implementation review phase: The extent of the project's success and results are measured.

3. Task distribution

We can allocate tasks to members clearly using the responsibilities matrix.

Task \ Role	Mechanical engineer	Electric engineer	AI&robot specialist	IOT specialist	Industrial engineer
Mechanical analysis and design of the robotic arm	R				A, I
Analysis and identification of the motors of the robotic arm	C	R			A, I
Programming the robotic arm using ROS			R		A, I
Robotic arm control interface design	C		C	R	A, I
Engineering leadership work and engineering management	I	I	I	I	R
Mechanical design of the robotic base and mechanical motion analysis	R				A, I
Construct and design a Brushless Motor		R			A, I
Programming computer vision systems in robots			R		A, I
Robotic base control interface design			C	R	A, I
Measuring vibration range, interference, and performance accuracy	I	I	I	I	R

- **R (Responsible):** The member who assigned to perform the work.
- **A (Accountable):** The member who is responsible to make sure the work is done.
- **I (informed):** The member who is notified of the work.
- **C (consulted):** The member who is being consulted to complete the work.

4. Project timeline

Date	Week 1					Week 2					Week 3					Week 4					Week 5				
Task	13 /6	14 /6	15 /6	16 /6	17 /6	20 /6	21 /6	22 /6	23 /6	24 /6	27 /6	28 /6	29 /6	30 /6	1 /7	4 /7	5 /7	6 /7	7 /7	8 /7	11 /7	12 /7	13 /7	14 /7	15 /7
Mechanical analysis and design of the robot arm																									
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Robotic base control interface design																									
printing																									
Assembling and testing																									

5. Production line

