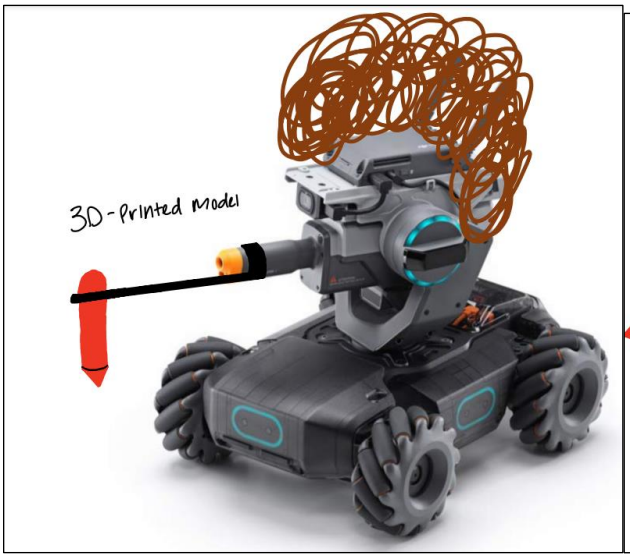
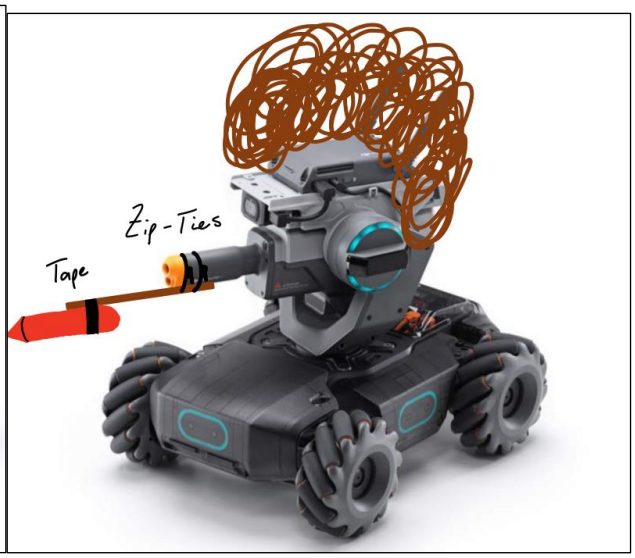
Project Deliverable E: Project Schedule and Cost

Final design concept drawing:




Prototype 1 concept drawing:




Cost of materials/components:

Prototype #1

| Item | Cost ($) |
|---|---|
| Paint stir stick | 2 |
| Zip ties | 5 |
| Marker | 5 |
| Robo master S1 | 0 |
| Cosmetics | 15 |
| DJI app | 0 |
| Tape | 2 |
| Super glue | 5 |
| Total | 29 |

Prototype #2

| Item | Cost ($) |
|---|---|
| Paint stir stick | 2 |
| Clamps | 10 |
| Marker | 5 |
| Robo master S1 | 0 |
| Cosmetics | 20 |
| DJI app | 0 |
| Magnets | 6 |
| Super glue | 5 |
| Total | 53 |

Prototype #3

| Item | Cost ($) |
|---|---|
| Paint stir stick | 2 |
| 3D Filament | 10 |
| Marker | 5 |
| Robo master S1 | 0 |
| Cosmetics | 20 |
| DJI app | 0 |
| Magnets | 6 |
| Super glue | 5 |
| Total | 63 |

## List of equipment:

- DJI scratch software
- RoboMaster S1
- 3D printing software
- 3D printer

## Prototyping test plan:

| Tests | | | | | Prototypes | | | |
|---|---|---|---|---|---|---|---|---|
| N° | Objective (Why) | Test Method (What) | Usage of Results (How) | Test Duration (When) | Type (What) | Objective (Why) | Fidelity | When to realise |
| 1 | Deployed marker dimensions | Measuring the attachment | Measuring dimensions, seeing if the marker reaches the ground | 1 hour | Focussed physical | Reach of modification | Low | 2025-02-28 |
| 2 | Weight of attachment | Weighing the modification | Finding weight to determine if the RoboMaster will support the attachment | 30 min | Focussed physical | Weight of modification to be supported | Low | 2025-03-09 |
| 3 | Effectiveness of video | Finding viewer reception to the anti-autonomous weapons message | Take input from users before and after viewing the video | 2 hours | Survey and user data collection | An effective anti-autonomous weapons message | Medium | 2025-03-27 |
| 4 | RoboMaster line following | Finding the correct code instructions for the robot to draw correctly | Trial and error while adjusting values incrementally on the software | 2 hours | Focussed physical and digital tests | Correct movement instructions for the RoboMaster | Low | 2025-03-20 |
| 5 | RoboMaster range of motion | Finding the right angle of the headpiece to allow for | Trial and error while adjusting values incrementally | 1 hour | Focussed physical and digital tests | Correct drawing angle for solid smooth lines | Low | 2025-03-20 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | better drawing | on the software | | | | | |

## Project plan:

| Task | Description | Responsible | Time Required |
|---|---|---|---|
| **1. Finalize Concept** | Narrow down from the 3 ideas and decide on the key elements of the 90-sec video + manifesto | Full team | 2 hours |
| **2. Script & Storyboard** | Write the detailed script (including anti-war themes) and plan shot sequences | Ava and Ben | 3 hours |
| **3. Materials Purchase** | Identify and buy all props, any special lighting/filming gear, or RoboMaster S1 accessories for each prototype | Robert and Zander | 3 hours |
| **4. RoboMaster S1 Setup** | Ensure the S1 is charged, updated, and safely configured. | Conner | 1.5 hours |
| 5. Prototyping & Testing | Build and test each prototype to evaluate feasibility, stability, and drawing quality. | Full team | 3 hours |
| 5.1 **Prototype #1** (Marker + Stick) | Attach a marker to a paint stir stick (secured with tape/zip ties) and see if the robot can draw basic lines. | Conner and Andre | 2 hours |
| 5.2 **Prototype #2** (Clamp + Magnets) | Use a small clamp and magnets to hold the marker onto the turret (removable solution). | Ben and Robert | 2.5 hours |
| 5.3 **Prototype #3** (3D Attachment) | 3D-print a custom piece that fits over the turret to hold the marker securely. | Zander and Ava | 3 hours |
| **6. Final Testing** | Review final video + manifesto for coherence, message | Full team | 3 hours |

| | | | |
|---|---|---|---|
| | clarity, and compliance with constraints | | |

## Significant project risks:

### A part breaks in the middle of testing (High Impact)

- Replace part
- Have spare parts on standby

### Marker runs out of ink (Medium Impact)

- Have multiple markers

### Robomaster S1 battery dies (Medium Impact)

- Keep spare battery/ charger close by

### 3D-printed attachment fails (High Impact)

- Print test pieces
- Have alternative attachment methods

### Software coding errors cause movement issues (High Impact)

- Test small code changes before full execution

### RoboMaster S1 fails to follow programmed path (Medium Impact)

- Adjust line-following values incrementally
- Use a controlled environment with clear lines