Specification

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This document outlines the requirements and objectives for the development of the Cyberpaw robotic dog. It includes detailed descriptions of the planned features and components, such as movement axes, remote control, modular design, and power management. Additionally, it covers extensions like programmable behaviors, camera integration, and autonomous navigation.

The requirements specification serves as the foundation for the development phase, ensuring that all planned features are clearly prioritized and implemented.

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| Nr. | Short description | Long description | Rating (1-5) | Completed | Comment |
| 1 | The Cyberpaw should have the same axes of movement as an ‘IRL’ dog. | This means that one leg requires a total of 3 servomotors per leg.   * Calves * Thigh * Hip joint | 5 |  |  |
| 2 | It should be controllable by remote control. | Should via. Bluethooth so that an X-Box controller can be used, for example. | 5 |  |  |
| 3 | The body frame should be lightweight yet sturdy. | The frame should be designed to minimize weight using 3D-printed components while maintaining structural stability. | 4 |  |  |
| 4 | Modular design for easy upgrades. | Components such as servos, sensors, and control boards should be replaceable without redesigning the entire robot. | 5 |  |  |
| 5 | Basic walking functionality. | The Cyberpaw should be able to perform basic walking movements (forward, backward, turning) under remote control. | 5 |  |  |
| 6 | Power management system. | Implement a rechargeable battery system with sufficient capacity for at least 1 hour of continuous operation.   |  | | --- | |  | | 4 |  |  |
| 7 | |  | | --- | | Status indicators. | | Include LEDs or a small screen to display the system status (e.g., power level, connection status). | 3 |  |  |
| 8 | Obstacle detection.   |  | | --- | |  | | Integrate sensors (e.g., ultrasonic or infrared) to prevent collisions and provide basic autonomy.   |  | | --- | |  | | 4 |  |  |
| 9 | Documentation and user manual.   |  | | --- | |  | | Create comprehensive documentation for assembly, programming, and control instructions.   |  | | --- | |  | | 5 |  |  |
| 10 | Battery level monitoring. | Implement a system to measure and display battery charge levels to prevent sudden shutdowns.   |  | | --- | |  | | 1 |  |  |
| 11 | Camera integration   |  | | --- | |  | | Add a camera module for streaming video or enabling computer vision tasks.   |  | | --- | |  | | 4 |  |  |
| 12 | |  | | --- | | Object following. | | Use sensors and AI algorithms to enable the robot to follow a specific object or person. | 4 |  |  |
| 13 | Compact storage design. | Make the robot foldable or easy to disassemble for transport and storage. | 3 |  |  |