

Conceptual Mechanical and Electrical Design of a Throwable Mini-Spy-Robot

Thesis outline

When entering a building, intervention forces (police, army, ...) are often confronted with the problem that they cannot know/see what danger is hiding behind a corner in the next room they want to enter.



In this context, the Unmanned Ground Vehicle Centre wants to develop a small, remotely controlled throwable robot, equipped with a camera, transmitting video data to the intervention troop, such that they can assess the situation in the room where the small robot is thrown. Ideally, the mini-robot should have the size of a grenade, such that it can be easily transported (and thrown away) by the intervention forces. However, first we want to develop a functional prototype, which will probably be larger.

The idea of this project is to provide the basis for this project: a conceptual design of the mechanics and electronics of such a robot, taking into account all the constraints posed on the system: it must be small & lightweight, robust, (throwable), it must be mobile and tele-operated (wireless) and it must dispose of an on-board wireless video-camera stream the video images to a remote client.

Student Tasks

Ideally, this project could be a shared effort between a mechanics student and an electronics student; sharing experiences while each working on their part of the conceptual design

The mechanics student is requested to output the following:

- A CAD model of the robot
- A list of all mechanical parts which need to be bought, including where they can be bought

The electronics student is requested to output the following:

- A design of the electronics parts of the robot
- A list of all electronics parts which need to be bought, including where they can be bought

Student Profile

- For the mechanical part: CAD/CAM experience
- For the electronics part: circuit design and drawing experience
- Sound interest in robotics