Creation of a data acquisition system for a multi-sensors amphibious drone

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Sewers, inspection, multi-sensors drone, acquisition

Subject title
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Project proposal

Introduction

Sewer inspections are more and more required to assess the state of the pipes. The usually used CCTV inspections are quite inaccurate and expensive. Our group is currently developing a laser profiler for sewer inspection, which has one major weakness: it can only be used a dry pipe (as regular CCTV camera).

By combining well-tested techniques (sonar, laser profiler) and promising techniques (velocity-turbidity profilers, IR camera), an amphibious drone will be built by our team. The first step of this design is to set up the acquisition and control system of this drone.

![Figure 1. Cold infiltration recorded by an IR camera (FLIR).](image1)

![Figure 2. A sonar (2512 USB, Marine electronics).](image2)

![Figure 3. 3d drawing of the laser profiler.](image3)

Experimental description

The main goal of this research will be to choose the missing materials, configure it and test the data acquisition and control system to fit autonomy, acquisition rate and synchronisation requirements.

Requirement

Additional notes

This master thesis will require few specific skills and knowledge:

1. Knowledge in data acquisition and control system
2. Skills in coding (Matlab)