

Project proposal

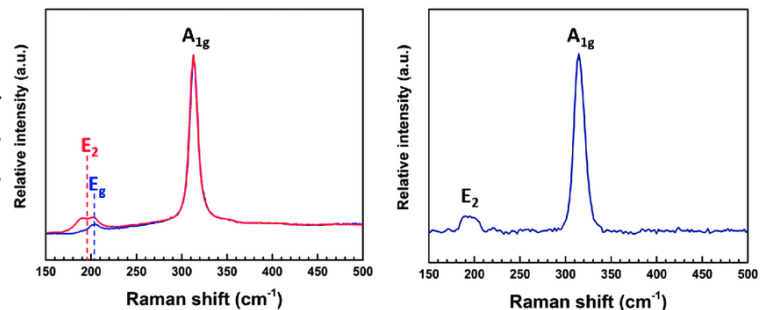
Title: Spectrometer Software
 Supervisor: TBD
 Timeframe: Spring 2021

EPFL Xplore is an interdisciplinary project whose aim is to design and develop a Rover to participate in two international competitions: The University Rover Challenge and the European Rover Challenge. One of the main tasks to achieve, the Science task, asks to detect life presence in a soil sample recovered by the rover.

Project description

Problematic

This project does not require any specific knowledge in spectroscopy. You will be working in collaboration with the student who designed the spectrometer.



Now that all the hardware is design and chosen, we need make the spectrometer working correctly by having some automation and signal processing.

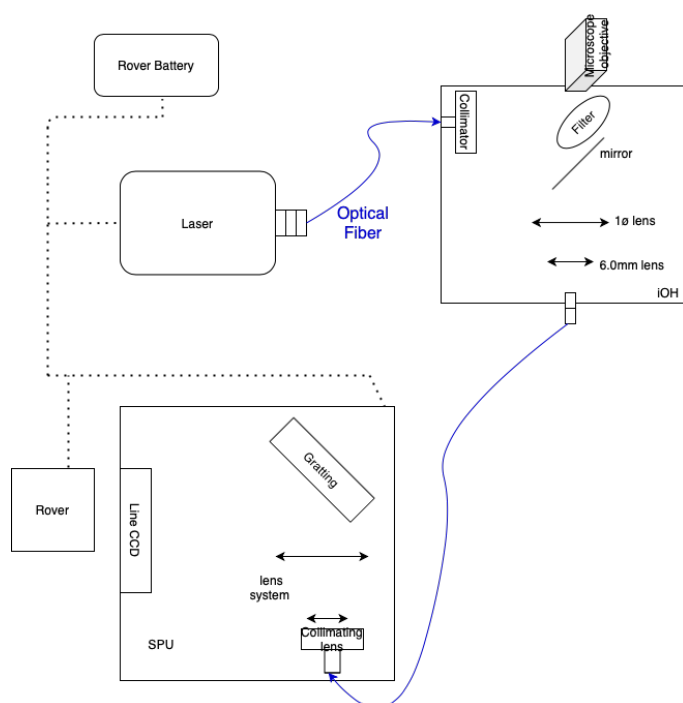
The different tasks of this project are:

- Automate the calibration of the spectrometer. The laser hits a small PET sample and it shall define by itself the value of each peak when hitting this sample.
- Temperature control of the CCD camera and of the laser to make sure that there is no too high temperature variation.
- Synchronize the laser and the camera
- Signal processing: smooth the signal, remove the baselines from the raw spectrum
- Automatic comparison of the spectrum with a database for automatic identification of the molecules

Means

The software will run on a Nvidia Jetson AGX Xavier.

Reference documents



Spectrometer scheme by Arthur Vard

Contact

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