Doctoral Thesis Title: Characterization of methane emissions from satellite due to fossil fuel extraction.

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Abstract:
Reducing anthropogenic methane emissions, the second most important greenhouse gas, is of great interest because of its relevance to global warming. The oil and gas sector currently accounts for approximately 30% of these emissions, most of which are potentially avoidable.

The high availability of satellites with a suitable configuration for methane detection offers the possibility to monitor emissions from both land-based and marine installations. The aim of this PhD thesis project is to detect these emissions at point sources using multispectral images from different public satellites, such as Sentinel-2 and Landsat-8/9, and hyperspectral images from high spatial resolution spectrometry missions such as PRISMA and EnMAP.

The aim is to explore the potential of these satellites on surfaces and to establish more accurate methods for detecting and quantifying methane plumes.

Available Means:
Resources needed for this project are:

- Programming Languages and Image Processing Software: Python, QGIS.
- Cloud-computing platforms such as Google Earth Engine, EoBrowser.
- Multispectral satellite images: Sentinel-2, Landsat-8, Landsat-9, etc.
- Hyperspectral satellite imagery: PRISMA, EnMAP, etc.

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