QlevEr Sat

Earth Observation & Artificial Intelligence

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Currently in its preliminary definition phase, QlevEr Sat will be observing the evolution of specific Earth regions and human activities associated with important societal issues, such as deforestation. In order to reduce the volume of data to be sent to the ground, the nanosatellite will preanalyse the data collected thanks to embedded AI.

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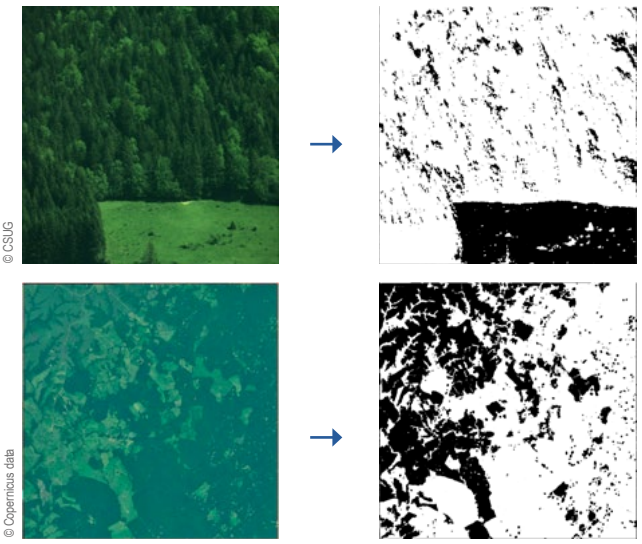
➲ *Observation CubeSat with embedded Artificial Intelligence*

The project is led by the **CSUG** in collaboration with the AI & Environment chair of the **MIAI Grenoble Alpes** (Multidisciplinary Institute in Artificial Intelligence), it is supported by **Teledyne e2v. Air Liquide** is also contributing via a patronage agreement with the Fondation UGA. Three SMEs are also involved in the project: **DSE** Grenoble, **U-Space** Toulouse and **Terrasigna** Romania.

QlevEr Sat will embark an innovative Artifical Intelligence (AI) module capable of processing the images from space in order to send easy-to-analyse and low volume data back to the Earth. At the end of Phase B1, a first demonstration of this module took place.



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➲ *Algorithm here trained to detect deforestation (in black)*

NewSpace and artificial intelligence

As the radio frequencies get saturated, data downlink to the ground has become a major issue in NewSpace. The challenge lies in interfacing a robust and radiation tolerant processor with a high-performance image sensor, within a small volume with low energy consumption (6U i.e. 6L for the entire satellite), in order to acquire and directly analyse the 5m resolution images. This will enable change detection in a given area.

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UGA Université Grenoble Alpes — GRENOBLE INP UGA — FONDATION Université Grenoble Alpes

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