

Imagine you had to ensure the safety of a very large industrial installation, such as an oil platform, a power plant, or a steel factory. Such an installation would feature high scaffoldings, complex networks of pipes, or dangerous machinery. How to inspect it and make sure that no damage has appeared anywhere? Sending qualified technicians on the spot is expensive and time-consuming; it can be dangerous or physically impossible. A solution is to use small aerial robots.

Aerial robots provide a cheap labor-force whose safety is not as critical as that of human beings. In practice, they offer valuable technical features: a great maneuverability, and the ability to access virtually any remote places.

Aerial robots are already used for such inspections, allowing to cut costs. However, they require to be remotely flown by human technicians, meaning that such inspections cannot be performed automatically yet. Our work aims to contribute at making aerial robots more autonomous and enabling them to navigate on their own.

More precisely, the objective of our work is to develop artificial-intelligence methods allowing a robot to automatically compute a path going through a series of critical locations in the most efficient way, within an industrial installation.