MISSION: POSSIBLE

Martin Vojtek *explains how the recent Louvre art heist could have been prevented with LiDAR*
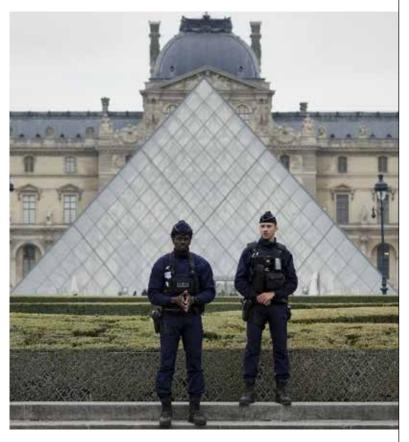
Seven minutes. That's how long the recent Louvre heist took. In broad daylight, a group of thieves rode up on a construction platform, smashed display cases, stole several historical jewels tied to the Napoleonic dynasty and escaped on scooters before anyone in the control room even realised what was happening. It sounds like a scene straight out of *Mission: Impossible*. Only this time, Tom Cruise wasn't there.

In movies, we often see tight webs of red laser beams guarding treasures, with the hero gracefully sliding between them. Reality, however, is far less cinematic. Most museums still rely on mechanical sensors, simple infrared barriers, cameras and the most fallible component of all: the human eye. But the human eye doesn't measure space. A camera records an image, but it doesn't know that a display case has shifted by three centimetres or that a visitor's hand just crossed an invisible boundary. That's where a new kind of perception comes in and that's known as LiDAR.

Forget the tangled maze of laser beams you've seen in films. A modern 128-channel rotating LiDAR fires hundreds of thousands of laser pulses per rotation, and it does this up to 10 times per second. That's millions of spatial measurements every second, creating an invisible web of light that maps the scene in 3D, without anyone ever noticing. What LiDAR builds is called a point cloud — a live three-dimensional model of the environment. The system constantly compares this "snapshot" with the current scene. If anything changes — a hand moves closer to an artifact, a case is displaced or an object disappears — LiDAR detects it instantly.

LIDAR MONITORS THE 3D ENVIRONMENT IN REAL TIME, DETECTS ANOMALIES AND REACTS IMMEDIATELY

LiDAR technology (such as LidarVision, developed by Hexagon), brings true 3D situational awareness into museums and galleries. It doesn't just see that someone is moving; it knows where, how fast and in what trajectory. Each detected object is tracked with its precise dimensions, velocity and spatial position. If a visitor steps too close to a protected exhibit, the system triggers an alarm. Pan-tilt-zoom (PTZ) cameras automatically turn to the exact spot and start recording. The operator no longer has to stare at dozens of screens, hoping to catch the right moment. LiDAR data also serves as forensic evidence — allowing investigators to replay the incident as a full 3D reconstruction. They can see exactly how intruders moved, from entry to exit, with centimetre precision.

LiDAR isn't just a tool against master criminals. It helps with daily operations, too — recognising when someone lingers suspiciously near a sensitive exhibit, when an unauthorised object enters the room or even when a visitor collapses. The system can trigger a silent alert, notify security staff or automatically redirect nearby cameras.

Art theft is not a cinematic rarity — it's a recurring tragedy. In 1990, 13 paintings worth more than half a billion dollars vanished from Boston's Isabella Stewart Gardner Museum. None have ever been recovered. Even Leonardo da Vinci's Mona Lisa was stolen from the Louvre in 1911 — though it was miraculously found two years later. That case, however, remains the exception. Thieves often fail to realise that cultural artifacts are not commodities. When they melt them down for gold or strip them for gems, they don't just destroy value — they erase history.

No security system is flawless. But while cameras merely watch, LiDAR understands space. From a single compact device, it monitors the 3D environment in real time, detects anomalies and reacts immediately. Modern security is no longer about higher fences or better cameras. It's about spatial understanding — knowing what is happening in the room right now. And that's something even Tom Cruise wouldn't be able to slip through ●

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