B196 Using Drones as a Valid Alternative to Employing Traditional Documentation Systems at Crime Scenes

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Learning Overview: After attending this presentation, attendees will understand the possibility of using drones as a valid alternative to employing traditional documentation systems at a crime scene.

Impact on the Forensic Science Community: This presentation will impact the forensic science community by showing the advantages of using drones to preserve crime scene integrity while assuring a thorough photo and video recording.

The documentation of the crime scene is an increasingly decisive activity for reconstructing the dynamics of a crime. The availability of digital tools and specific lighting techniques such as forensic lights have also widened the possibility of identifying and distinguishing latent traces. Decisive, important data can also be obtained using miniaturized 3D laser scanners which offer a further opportunity to obtain precise measurements and extremely interesting models for reconstructive purposes.

However, the problem of contamination remains partially unsolved because taking photos, videos, and the calculations of dimensions and distances forces the operators to move within the crime scene and therefore to contaminate it or change the original conditions, involuntarily, despite anti-contamination procedures even if in compliance with relevant safeguard guidelines.

This is what led the author to think about recent technological progress and how it has provided the availability of instruments such as drones, which can be an extraordinary alternative to the traditional systems which are currently used today, especially when considering that the models that are on the market today are small, easy to maneuver, have high quality cameras, and take excellent photos. Drones are also compatible with dedicated photogrammetric software with which you can build 3D models, maps, and orthomaps with the relative measurements. This is all possible thanks to footage which is taken outside the crime scene.

A wide experiment was conducted through a considerable series of tests with scenarios built ad hoc, varying the environments (indoor/outdoor), lighting conditions, and weather conditions.

The experiment conducted the following tests, using two different drones, the DJI SPARK and the DJI MAVIC AIR manufactured by DJI:

- Outdoor relief with high temperature
- Outdoor relief with low temperature
- Outdoor relief with fog
- Outdoor relief with snow
- Outdoor relief with rain
- Outdoor relief with lots of light
- Outdoor relief with little light
- Relief outdoor with darkness
- Outdoor relief with smoke
- Outdoor relief with medium wind
- Relief outdoors with strong wind
- Inspection inside a well
- Inspection inside a farmhouse
- Search for a fugitive
- Search for a missing person
- Water-based research
- Test in inaccessible areas / woods / without GPS
- High altitude test
- Relief indoors with light
- Embossed indoors
- Indoor relief completing dark
- Switching from windows and doors
- Relief indoors in a large place
- Relief indoors in a tight place
- Relief in the shower/bathtub

The results obtained are exciting and show that drones are a tool that not only can be considered a valid alternative to the systems in use, but they also provide even greater opportunities such as the advantage of a secure safeguard of the crime scene. The presentation will show some of the results that have been obtained through images and videos taken from the experiment performed.

Drones, Crime Scene, Photo And Video Documentation