

DRONE SANITIZER

ABSTRACT

Drones are now routinely used for sanitation, collecting aerial imagery and creating digital elevation models (DEM). The demand for drones has drastically increased due to the pandemic. Lightweight thermal sensors provide another payload option for generation of very high-resolution aerial thermal orthophotos. This technology allows for the rapid and safe survey of thermal areas, often present in inaccessible or dangerous terrain.

HERO (Healthcare Early Rescue Operation) is a drone sanitizer which will use thermal fever screening camera that detects the infrared energy invisible to the human eye that people and objects emit.

The software in HERO constructs a heat map of exposed skin. Thermal Infrared cameras like Flir, Danu HY-1, Melexis MLX 90640 cameras and Infrared Thermography for long Infrared radiation and the electromagnetic spectrum to produce thermogram images. Objects with a temperature above absolute zero emit infrared radiations, thus making it possible to see without illumination. The amount of radiation increases with the increase in temperature. Therefore, thermography allows us to see the variation in temperature.

HERO can help to identify people with high temperatures. The thermal cameras make it a long-range system and the thermogram makes it as accurate as possible. The Kalman filter can be used to filter out the noise and other inaccuracies and produce estimates of the unknown variables that tend to be more accurate. Thus, the linear-quadratic estimation shows the required human temperature over the noise produced by the imaging and the background subtraction lead to the target temperature.

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HERO will have a flight time of about 30-40min. The accuracy of HERO is estimated to be around 80-90%. HERO can measure a greater number of people without any close contraction when compared to a thermal image device. HERO is costly but worth it. In future, HERO can be modified and also be used for any medical services in case of such virus outbreaks.