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Smart Thermal Tracking to Guide Sanitization of Clinical Surfaces

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Unmet Need

The thermal imaging camera market is expected to grow to $ 4.7 billion by 2026. This tremendous growth could be attributed to increased government spending on such technologies and the eager adoption of thermal imaging in the healthcare and commercial sectors for use in non-standard ways. For example, thermal images can be used to determine when a person has touched a surface and therefore that surface may be contaminated. Thermal cameras are beneficial as the camera need not be physically near the person or surface being evaluated.

Technology

Duke inventors have developed a smart imaging platform that detects touched region in real time by measuring the temperature change in the area of interest. A touched region is the area that is contacted on a surface when a person touches it, leaving behind anything that may be on their hands, that is, bacteria, food contaminants, fomites, or viruses. This technology is designed to provide continuous, non-contact, highly-accurate touchpoint detection capabilities using thermal technology and artificial intelligence. A study of the system shows that the touched region detection pipeline can achieve 75.0% precision and 81.5% F1-score for the testing experiments of predicting the touched regions.

Applications

Day and night surveillance of communal spaces.

Monitor touchpoint detection in commercial and public areas, i.e. schools, malls, airports, hospitals, etc.

Detection in any space where the contact between two surfaces of different temperatures is useful to measure.

Use of thermal imaging in food preparation to determine when a raw, cold piece of meat such as chicken touches a surface thus contaminating it.