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Algorithm-based Approach in Support of Satellite Imagery Analysis for Countering Nuclear Proliferation: Considerations and Challenges

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Electro-optical satellite imagery provides analysts with opportunities to monitor suspicious nuclear activities in the restricted access area. The more remote sensing technology advances, the more resources available from both spatial and temporal resolution standpoints. Spatially, the area of interest that needs to be monitored by analysts has been detailed and accordingly increased; numerically, the acquisition of satellite imagery is available on a daily basis. Inevitably, automated or even semi-automated support for analysts is required in the field of study. This paper presents characteristics of dealing with small scale objects on high spatial resolution satellite imagery derived from conventional and cutting edge technology applications for change detection in remote sensing. On the condition that the purpose of the analysis is to counter nuclear proliferation against outlaw states, historical records of the algorithm based approaches are reviewed, showing where the outcome has been attained. Then, the effect of image to image registration, shadow, and side section due to the angle of attack is discussed, considering the size of the target objects derived from the feasibility study. The challenges of each factor are addressed with a way forward.

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Promotional text

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Oral preference format

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