Establishing Sun-glint estimation Model for Unnamed Aerial System Image through Photogrammetry

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The occurrence of sun glint can obscure important details in an image, making it difficult to discern objects or features on the Earth's surface. Nowadays, Unmanned Aerial Vehicle (UAV) imagery products suffer from blurring and degradation caused by sun reflection effects, resulting in reduced image contrast, color fidelity in photogrammetry, and compromised radiometric values in remote sensing applications. Various techniques, including detection methods and specialized algorithms, are used to minimize sun glint's impact in satellite imagery. However, it remains uncertain if the processing methods used in satellite imagery can be effectively applied to images with higher spatial resolution.

By establishing the Geometric Relationship between the earth surface, sun, and sensor, a threshold will be set to determine the presence or absence of sun glint. The threshold determination will be based on past research findings and also on thresholds developed within this study, providing distinct threshold values for different computation methods. The research aims to grasp the impact of sun glint during various time periods by calculating the results before conducting the flight, with the objective of identifying the time period with the least occurrence of sun glint. Utilizing photogrammetric techniques to establish a sun glint prediction model provides users with insights into the distribution of sun glint throughout the entire image acquisition process during the planning phase. This enables the feasibility of planning flight schedules during periods of the day that offer higher efficiency in capturing useful images through adjusting the timing and exterior orientation.

Keywords: Sun glint, Unnamed Aerial Vehicle, Photogrammetry, Flight planning