Evidences of sub-optimal photogrammetric modelling in RPAS-based aerial surveys

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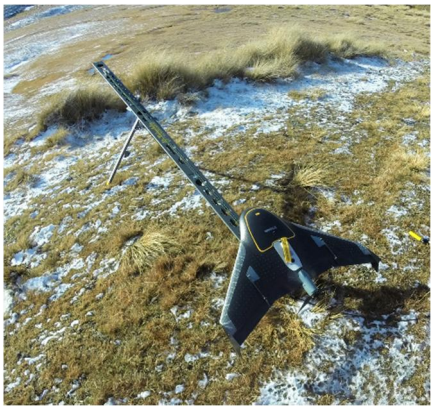
Aerial Photogrammetry module

Agisoft
3D Modeling and Mapping



PIX4D
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Abstract: Remotely Piloted Aircraft Systems (RPAS) are revolutionizing aerial mapping and find many successful applications in surveying and environmental monitoring. These new platforms allow large amount of overlapping images to be collected for photogrammetric processing. Many photogrammetric software priced for all budgets are available to complete the aero-triangulation and produce deliverables such as dense point clouds and high resolution ortho-photos with claimed accuracies once achievable by specialized surveyors only. These applications often use consumer-grade cameras which are not calibrated, and thus rely on self-calibration (determination of interior orientation parameters) during the bundle block adjustment to adjust both interior and exterior orientation parameters concurrently. Extensive testing of three industry-leading software show that this approach runs a high risk of yielding sub-optimal solutions whereby the physical settings of the camera are not properly modeled, in turn compromising greatly the robustness of the model and the accuracy of the deliverables. Systematic errors and spatially structured biases associated with sub-optimal solutions cast a shadow on the true performance achievable by UAV-based photogrammetry.

12:00 noon, Thursday, 18 August 2016
L1 Lecture Theatre
School of Surveying
310 Castle Street

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