

Is SfM photogrammetry really the tool we've waited 30 years for?

Jim Chandler, Natan Micheletti and Stuart Lane

SfM photogrammetry has evolved rapidly in the last few years, to the point where it is beginning to surpass terrestrial laser scanning for capturing 3-D models of natural surfaces. The ability to generate high resolution digital terrain models using just a consumer grade digital camera, or even a smart phone, is an important advance. The fact that this can be achieved at a range of scales and resolutions and from a variety of platforms, whilst using software which is freely available, appears almost incredible.

This invited presentation seeks to place SfM photogrammetry in its proper historical context, by demonstrating just how rapidly techniques have evolved over the last 30 years. However, it is important to look forward and help ensure that future use is effective, even if spatial measurement expertise is limited. Consequently, the presentation will also demonstrate just how well-established lessons learnt in the past continue to remain important, particularly if accurate spatial data is desired. The application of SfM to a range of case studies will help to demonstrate the importance of scene geometry and accurate camera calibration and modelling. In addition, the establishment of external control remains critical for determining true change and the provision of independent checkpoints provides important verification of accuracies actually achieved. Recognition of these traditional photogrammetric principles and well-established practices should help ensure that expectations are both realistic and can be fulfilled, even for a new generation of non-expert users.