

Abstract:

Drones have proven to be a revolutionary technology in the field of environmental science. Their flexible and cost-efficient nature, as well as the high-resolution end-products, make them increasingly appealing to researchers. The two most popular methods for capturing terrain information using a drone are aerial photogrammetry and airborne LiDAR (Light Detection And Ranging). Photogrammetry is based on performing measurements on overlapping photographs for the extraction of 3D information. On the other hand, LiDAR is a ranging technique that measures distances by sending laser pulses at a feature and measures the reflected pulses with a sensor. Using trigonometry, distances can be calculated very accurately, and with a sufficient amount of points of reflection, it is possible to reconstruct a point-based model of the terrain. Because of the differences in the measuring principles of these two methods, advantages and disadvantages are depending on the application. With the recent development in the drone surveying space, photogrammetry versus LiDAR has recently become a subject of continuous discussions. LiDAR is commonly regarded as superior to photogrammetry because laser beams sent from the sensor can penetrate vegetation and reach the terrain and objects below the canopy. However, photogrammetry can typically achieve high data quality in a much more cost-efficient way when compared to LiDAR. This seminar presentation will provide a detailed overview of the strengths and limitations of photogrammetry and LiDAR to understand the common misconceptions of these two technologies.