

David Biggs

Promoter: Prof K. Schreve

Co-promoter: Dr R. Theart

Title: Improving Counting Performance of Densely Flocked Sheep in Aerial Imagery

This research advances the application of machine learning and computer vision for sheep counting in drone imagery. It addresses challenges posed by high object densities and low object-to-image-pixel ratios. A unique dataset comprising aerial imagery and videos of sheep grazing in diverse conditions is presented alongside two novel methods which mitigate these challenges. The first, local density threshold shifting, focuses on scenarios with high object densities, while the second, sub-window inference, improves object-to-image-pixel ratios. These methods are designed to significantly enhance counting accuracy by effectively addressing the challenges identified, thereby paving the way for more accurate and efficient livestock monitoring.