**A Deep Learning and UAV Technology-Based Approach to Wildlife Monitoring**

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***ABSTRACT***

The Qinghai Tibet Plateau's wildlife faces threats to their survival, like poaching. It is essential to provide an intelligent monitoring system to safeguard their lives. On the basis of this, this paper suggests a deep learning and UAV-based multi-target tracking system. First, based on the Yolov7 detection method, the SimAM attention mechanism is implemented to boost the accuracy of object detection. Next, a unique Deep SORT-based appearance feature extraction network was suggested. In order to minimize the frequency with which target IDs are switched during tracking, this network incorporates the idea of convolutional structure reparameterization and constructs a full-size feature extraction module to extract the target's full-scale appearance features. In addition, a visual servo controller designed especially for UAVs to lessen the impact of rapid movement on tracking. Lastly, using a self-built dataset, experiments were carried out and compared with the most advanced multi-objective tracking algorithms available. The experimental findings demonstrate the great tracking accuracy of the system. For a total of 67.8% and 79.6%, MOTA and MOTP increased by 6.7% and 3.7%, respectively, in contrast to the baseline method Deep SORT. This approach offers great technological support for preserving the diversity of wildlife by demonstrating reliability in complicated settings through thorough evaluation and analysis.

**Keywords:** Wildlife monitoring; UAV; Deep learning; Deep SORT