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			authors	• Ilker Bozcan • Erdal Kayacan	DUPLICATES	126
	authors	• Bozcan, I. • Kayacan, E.	**title**	UAV-AdNet: Unsupervised Anomaly Detection using Deep Neural Networks for Aerial Surveillance		
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	urls	• http://xplorestaging.ieee.org/ielx7/9340668/9340635/09341790.pdf?arnumber=9341790 • http://dx.doi.org/10.1109/iros45743.2020.9341790	**id**	id8739553101419180819		
	id	id-8174721636756565003	**abstract**	Anomaly detection is a key goal of autonomous surveillance systems that should be able to alert unusual observations. In this paper, we propose a holistic anomaly detection system using deep neural networks for surveillance of critical infrastructures (e.g., airports, harbors, warehouses) using an unmanned aerial vehicle (UAV). First, we present a heuristic method for the explicit representation of spatial layouts of objects in bird-view images. Then, we propose a deep neural network architecture for unsupervised anomaly detection (UAV-AdNet), which is trained on environment representations and GPS labels of bird-view images jointly. Unlike studies in the literature, we combine GPS and image data to predict abnormal observations. We evaluate our model against several baselines on our aerial surveillance dataset and show that it performs better in scene reconstruction and several anomaly detection tasks. The codes, trained models, dataset, and video will be available at https://bozcani.github.io/uavadnet.		
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