



Abstract

A UAV-Based Ignition Detection in Prescribed Fires Using Deep Learning[†]

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† Presented at the Third International Conference on Fire Behavior and Risk, Sardinia, Italy, 3–6 May 2022.

Abstract: Forest wildfires have been an aggravating disaster during the past decades due to the rise of global temperatures. Forest management operations like prescribed fires are paramount for preserving these environments, although they present intrinsic risks. The FoCoR project aims to exploit UAVs with multispectral cameras to help manage prescribed fires by applying real-time detection and segmentation of ignitions. This paper proposes and details a basic supervised Deep Learning model capable of accurately detecting and segmenting prescribed fires. The model is based on the Mask R-CNN framework and is optimized with the best f1-score of approximately 70% which was considered a good starting point for further development. The used image dataset, consisting of more than 2500 polygonal labeled aerial RGB images acquired during prescribed fires will also be made publicly available for training more models in the future.

Keywords: UAV; RGB; remote sensing; robot; deep learning



Citation: Marques, F.; Herranz, L.; Ghalati, N.; Oliveira, I.; Barata, J. A UAV-Based Ignition Detection in Prescribed Fires Using Deep Learning. *Environ. Sci. Proc.* **2022**, *17*, 59. <https://doi.org/10.3390/environsciproc2022017059>

Academic Editors: Pierpaolo Duce, Donatella Spano, Michele Salis, Bachisio Arca, Valentina Bacciu, Grazia Pellizzaro and Costantino Sirca

Published: 10 August 2022

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Author Contributions: Conceptualization F.M. and L.H.; methodology, F.M. and L.H.; software, L.H., I.O. and N.G.; validation, all authors; project administration, F.M. and J.B.; funding acquisition, J.B. All authors have read and agreed to the published version of the manuscript.

Funding: This work was supported by FoCoR project PCIF/MPG/0086/2017 funded by FCT—Portuguese Foundation for Science and Technology.

Institutional Review Board Statement: Not applicable.

Informed Consent Statement: Not applicable.

Data Availability Statement: Not applicable.

Conflicts of Interest: The authors declare no conflict of interest.