

# Squeezed Fire Segmentation Model using Deep Learning for Outdoor Images on Mobile Device

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## ABSTRACT

Image-based fire events prediction is widely applied, but the current predictive methods are difficult to implement because of low performance and high specifications. In this paper, to we propose binary semantic segmentation for fire images by employing deep learning that can be applied to embedded devices such as Jetson TX2. Here, we propose the confusion block that the model can be executed more active training proceed. From these study, we achieved a significantly small-sized network for fire segmentation with the highest performance.

## REFERENCES

1. Yuan, Feiniu and Zhang, Lin and Xia, Xue and Wan, Boyang and Huang, Qinghua and Li, Xuelongg. *Deep smoke segmentation*. Neurocomputing, Vol. 357, pp. 248–260. 2019
2. Tuba, Viktor and Capor-Hrosik, Romana and Tuba, Eva. *Forest Fires Detection in Digital Images Based on Color Features*. International Journal of Education and Learning Systems, Vol. 2, 2017
3. Quan, Tran Minh and Hildebrand, David GC and Jeong, Won-Ki. *Fusionnet: A deep fully residual convolutional neural network for image segmentation in connectomics*. arXiv preprint arXiv:1612.05360. 2016
4. Drozdal, Michal and Chartrand, Gabriel and Vorontsov, Eugene and Shakeri, Mahsa and Di Jorio, Lisa and Tang, An and Romero, Adriana and Bengio, Yoshua and Pal, Chris and Kadoury, Samuel. *Learning normalized inputs for iterative estimation in medical image segmentation*. Medical image analysis, Vol. 44, pp. 1-13. 2018

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