

## Attention-Based Spatio-Temporal Approach for Fire and Smoke Detection

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**Abstract :** In various industries, smoke and fire are two of the most important threats in the workplace. One of the common methods for detecting smoke and fire is the use of infrared thermal and smoke sensors, which cannot be used in outdoor applications. Therefore, the use of vision-based methods seems necessary. The problem of smoke and fire detection is spatiotemporal and requires spatiotemporal solutions. This paper presents a method that uses spatial features along with temporal-based features to detect smoke and fire in the scene. It consists of three main parts; the task of each part is to reduce the error of the previous part so that the final model has a robust performance. This method also uses transformer modules to increase the accuracy of the model. The results of our model show the proper performance of the proposed approach in solving the problem of smoke and fire detection and can be used to increase workplace safety.

**Keywords :** attention, fire detection, smoke detection, spatio-temporal

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