

VideoAssist: A Labelling Assistant to Increase Efficiency in Annotating Video-Based Fire Dataset Using a Foundation Model

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Abstract : In the field of surveillance-based fire detection, the volume of incoming data is increasing rapidly. However, the labeling of a large industrial dataset is costly due to the high annotation costs associated with current state-of-the-art methods, which often require bounding boxes or segmentation masks for model training. This paper introduces VideoAssist, a video annotation solution that utilizes a video-based foundation model to annotate entire videos with minimal effort, requiring the labeling of bounding boxes for only a few keyframes. To the best of our knowledge, VideoAssist is the first method to significantly reduce the effort required for labeling fire detection videos. The approach offers bounding box and segmentation annotations for the video dataset with minimal manual effort. Results demonstrate that the performance of labels annotated by VideoAssist is comparable to those annotated by humans, indicating the potential applicability of this approach in fire detection scenarios.

Keywords : fire detection, label annotation, foundation models, object detection, segmentation

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