

## **An Industrial Workplace Alerting and Monitoring Platform to Prevent Workplace Injury and Accidents**

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**Abstract :** Workplace accidents are a critical problem that causes many deaths, injuries, and financial losses. Climate change has a severe impact on industrial workers, partially caused by global warming. To reduce such casualties, it is important to proactively find unsafe environments where injuries could occur by detecting the use of personal protective equipment (PPE) and identifying unsafe activities. Thus, we propose an industrial workplace alerting and monitoring platform to detect PPE use and classify unsafe activity in group settings involving multiple humans and objects over a long period of time. Our proposed method is the first to analyze prolonged actions involving multiple people or objects. It benefits from combining pose estimation with PPE detection in one platform. Additionally, we propose the first open-source annotated data set with video data from industrial workplaces annotated with the action classifications and detected PPE. The proposed system can be implemented within the surveillance cameras already present in industrial settings, making it a practical and effective solution.

**Keywords :** computer vision, deep learning, workplace safety, automation

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