IJARSCT
ISSN (Online) 2581-9429
International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
Impact Factor: 7.301
Volume 3, Issue 10, May 2023

Personal Protective Equipment Detection

Tejus Kumar S N[1], Rajesh R[2], S S Akash[3], Vishal Kumbar G[4], Dr. Madhu B K[5]
B.E Students, Department of Computer Science and Engineering[1,2,3,4]
Professor and Head, Department of Computer Science and Engineering[5]
Vidya Vikas Institute of Engineering and technology, Mysore, India

Abstract: *The implementation of Personal Protective Equipment (PPE) plays a critical role in maintaining the safety of workers in various industries exposed to hazardous environments. However, enforcing adherence to PPE usage can be challenging as it often relies on manual inspections by supervisors or safety officers. In recent years, there has been a growing interest in developing automated systems that utilize computer vision and deep learning techniques to detect PPE usage. Addressing this need, the project titled "Personal Protective Equipment Detection using YOLOv8" aims to create a deep learning model capable of automatically identifying the presence of essential protective gear such as masks, safety glasses, reflective vests, and hardhats. By leveraging the YOLOv8 architecture and training the model on a diverse dataset containing images of individuals both wearing and not wearing PPE, this proposed system demonstrates accurate detection of PPE usage. Such a system would be invaluable for organizations seeking to ensure the safety of their employees and customers, as well as for monitoring compliance with safety regulations in public spaces. This project showcases the immense potential of deep learning in enhancing safety measures and mitigating risks across various industries*

Keywords: Personal Protective Equipment (PPE), perilous environments, diverse industries, compliance, manual inspection, computer vision, deep learning technique, PPE detection, masks, safety glasses, reflective vests, hardhats, YOLOv8 architecture, training, dataset, accuracy, safety regulations, public spaces, deep learning, augmenting safety measures

REFERENCES

[1]. A study by Redmon and Farhadi titled "YOLOv3: An incremental improvement" discusses advancements made in the YOLOv3 algorithm.
[2]. Redmon, Divvala, Girshick, and Farhadi present the original YOLO algorithm in their paper "You only look once: Unified, real-time object detection" at the IEEE conference on computer vision and pattern recognition in 2016.
[3]. Redmon and Farhadi propose YOLO9000, an improved version of YOLO, in their paper "YOLO9000: better, faster, stronger."
[4]. Li, Li, Li, and Cui introduce a PPE detection system based on deep learning in their article published in Sensors journal.
[5]. Chen, Zhang, and Wang present a real-time PPE detection system using YOLOv3 in the Journal of Physics: Conference Series.
[6]. Zhang, Yang, Fu, Zhao, Wang, and Ye discuss the automatic detection of PPE in construction sites based on the Faster R-CNN algorithm in the Journal of Computing in Civil Engineering.
[7]. Jin, Jiang, Sun, and Cao propose an improved Faster R-CNN algorithm for PPE detection in construction sites in the Applied Sciences journal.
[8]. Ren, He, Girshick, and Sun introduce the Faster R-CNN algorithm for real-time object detection in their paper published in IEEE Transactions on Pattern Analysis and Machine Intelligence.
[9]. Shang, Mao, Cheng, Zhao, and Zhou present a novel deep learning-based method for detecting PPE in the Journal of Computational Science.
[10]. Zhang, Yang, Tian, Wang, and Zhang discuss PPE detection based on deep learning in their paper presented at the International Conference on Cyber Security and Privacy Engineering.

IJARSCT
ISSN (Online) 2581-9429
International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
Impact Factor: 7.301
Volume 3, Issue 10, May 2023

[11]. Kim, Lee, and Kim propose Fast Mask R-CNN for PPE detection in the Applied Sciences journal.
[12]. Wei, Fan, Yu, and Zhao present an object detection model based on YOLOv5 for PPE in the construction industry in Engineering Reports.
[13]. Kuo, Lu, and Chou discuss detecting PPE using Mask R-CNN for occupational safety in the Sensors journal.
[14]. Siddique, Rehman, Lee, and Jeong focus on improving the YOLOv3-tiny network in their paper published in Symmetry journal.