Phase 1 – Conception Phase

Title: Automated Industrial Safety Management System

Abstract:

In industrial areas like factories, building sites and train yards where employees are regularly exposed to dangerous situations safety is still a top priority. Even though personal protective equipment (PPE) including gloves, vests and helmets are readily available, noncompliance with safety regulations continues. In vast industrial locations in particular manual PPE usage oversight is often unreliable, ineffective and unable to generate timely alerts. This lack of precise and continuous monitoring increases the risk of accidents, injuries and inefficiency at work. To address these issues, I have proposed an Automated Industrial Safety Monitoring System that continuously observes workers to ensure compliance with safety requirements. This technology checks to see if workers are wearing the appropriate safety equipment using an intelligent detection model. When a violation is found, it logs the occurrence, instantly notifies supervisors, and saves the information for further review. Additionally, the system generates visual compliance reports and trend analyses to help management identify recurring issues and improve safety practices. Unlike traditional systems that only focus on gear detection this project integrates end to end functionality from detection to alerting and reporting providing a complete and practical safety management solution. The project is planned to produce an effective, scalable and reliable solution that increases worker safety by automating compliance monitoring. It will encourage proactive safety management, lessen human error and eliminate the need for manual supervision. In industrial settings the produced data and visual summaries will enhance worker accountability, facilitate data driven decision making and reduce the risk of accidents. The system's ultimate goal is to improve operational effectiveness and safety culture in all industrial sites.